

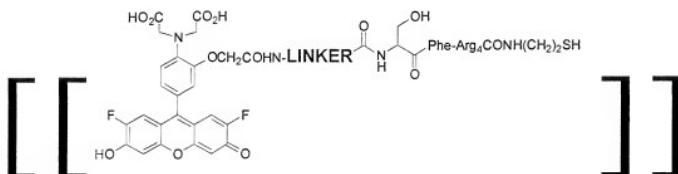
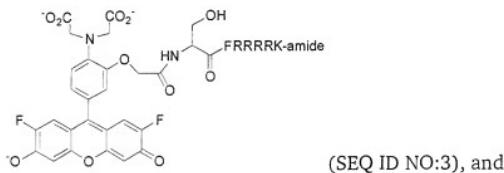
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Amendments to the Claims:

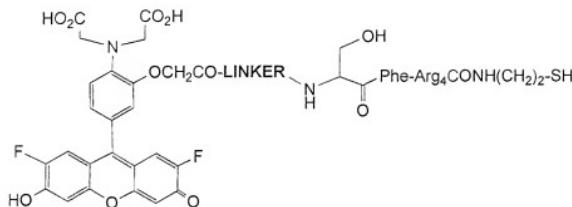
Please cancel Claim 98 without prejudice or disclaimer, and amend Claims 49, 60-66, 80, 88-90, 93, 99, 101, 127-129, 148 and 153 as set forth below.

1-48. (Canceled)

49. (Currently amended) A substrate for a protein kinase, wherein the substrate is selected from the group consisting of:



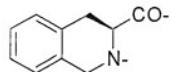
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wherein F is phenylalanine, K is lysine, and R is arginine; and wherein the LINKER is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



and



50-55. (Canceled)

56. (Previously presented) A substrate for a protein kinase or a precursor of the substrate, wherein the substrate or the precursor comprises:

a peptide substrate for the protein kinase, wherein the peptide comprises a serine, a threonine, or a tyrosine on a terminal end of the peptide;

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at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide;

wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of



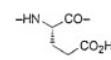
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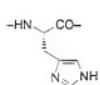
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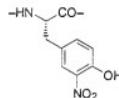
c



d



e



f



g



h



i



j

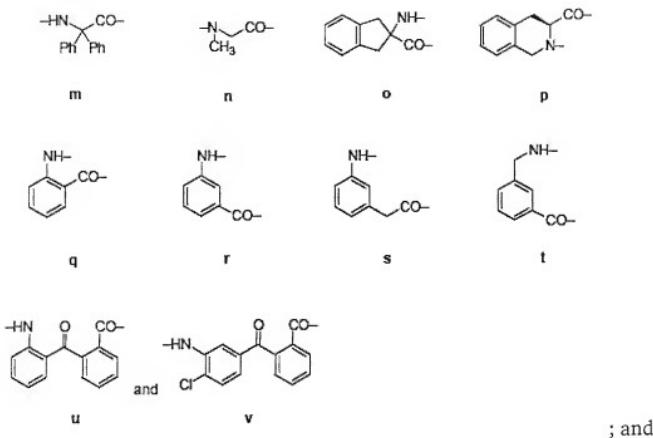


k



l

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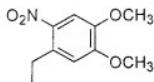


wherein

- (i) the substrate is specific for a protein kinase subtype,
- (ii) the fluorophore is attached to the C-terminal end of the peptide,
- (iii) a fluorophore is attached to each terminal end of the peptide,
- (iv) a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide,
- (v) the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative, and/or
- (vi) the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

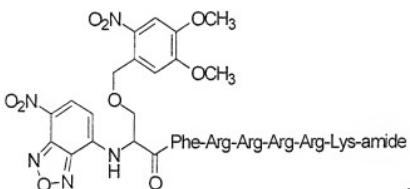
57. (Previously presented) The precursor of the substrate of claim 148, wherein the photolabile side chain comprises the structure

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58. (Previously presented) The precursor of the substrate of claim 56, wherein the precursor of the substrate comprises a serine with a photolabile side chain that blocks phosphoryl transfer.

59. (Previously presented) The precursor of a substrate for a protein kinase, where the precursor comprises SEQ ID NO:3 and has the structure



60. (Currently amended) The precursor of a substrate for a protein kinase substrate or the precursor of the substrate of claim 148, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% change in fluorescence intensity.

61. (Currently amended) The precursor of a substrate for a protein kinase substrate or the precursor of the substrate of claim 148, wherein after removal of the

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photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% increase in fluorescence intensity.

62. (Currently amended) The precursor of a substrate for a protein kinase substrate or the precursor of the substrate of claim 148, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% decrease in fluorescence intensity.

63. (Currently amended) The precursor of a substrate for a protein kinase substrate of claim 60, wherein phosphorylation of the substrate by the protein kinase produces at least a 70% change in fluorescence intensity.

64. (Currently amended) The precursor of a substrate for a protein kinase substrate of claim 63, wherein phosphorylation of the substrate by the protein kinase produces at least a 100% change in fluorescence intensity.

65. (Currently amended) The precursor of a substrate for a protein kinase substrate of claim 64, wherein phosphorylation of the substrate by the protein kinase produces at least a 150% change in fluorescence intensity.

66. (Currently amended) The precursor of a substrate for a protein kinase substrate of claim 65, wherein phosphorylation of the substrate by the protein kinase produces at least a 250% change in fluorescence intensity.

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67. (Previously presented) The substrate of claim 56, wherein the substrate is specific for a protein kinase subtype.

68. (Original) The substrate of claim 67, wherein the substrate is specific for protein kinase C.

69. (Original) The substrate of claim 68, wherein the substrate is specific for isoforms α , β , and γ of protein kinase C.

70. (Original) The substrate of claim 67, wherein the substrate is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca^{+2} /calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

71. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

72. (Canceled)

73. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is attached to the C-terminal end of the peptide.

74. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is attached to the N-terminal end of the peptide.

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75. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein a fluorophore is attached to each terminal end of the peptide.

76. (Previously presented) The substrate or the precursor of the substrate of claim 75, wherein fluorophores with distinct photophysical properties are attached to different terminal ends of the peptide.

77. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide.

78. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

79. (Previously presented) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore comprises a fluorescein group.

80. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore comprises a dansyl group, an acridine group, an Alexa Fluor ® group, a BODIPY ® group, an Oregon Green ® group, a Rhodamine Green group, a Rhodamine Red-X group, a Texas Red ® group, a Cascade Blue ® group, a Cascade Yellow group, a Marina Blue ® group, a Pacific Blue group, an AMCA-X group, or a coumarin group.

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81-82. (Canceled)

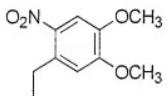
83. (Previously presented) A precursor for a substrate for a protein kinase, wherein the precursor for the substrate comprises:

a peptide comprising a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide; and

a photolabile side chain attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate, and

wherein the photolabile side chain comprises the structure

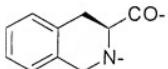


and

wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

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84. (Previously presented) The substrate or the precursor for the substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of N-methyl glycine, L-proline, D-proline,



85. (Canceled)

86. (Previously presented) A composition comprising the substrate or the precursor for the substrate of claim 56, and a carrier.

87. (Original) The composition of claim 86, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

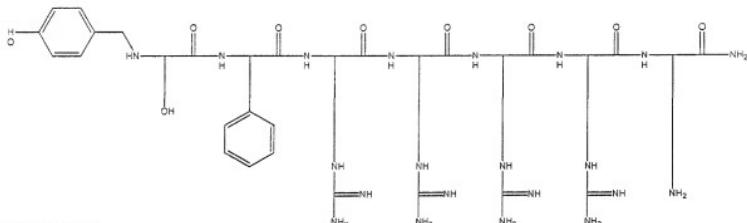
88. (Currently amended) A chemical compound comprising SEQ ID NO:3 selected from the group of compounds consisting of:

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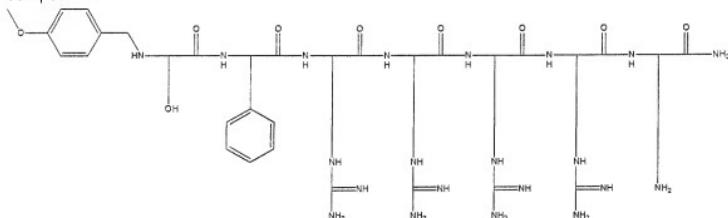
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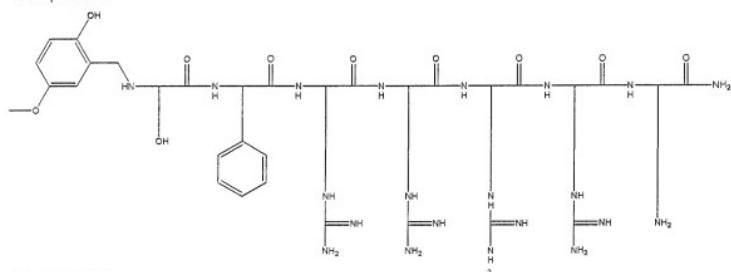
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Compound 1

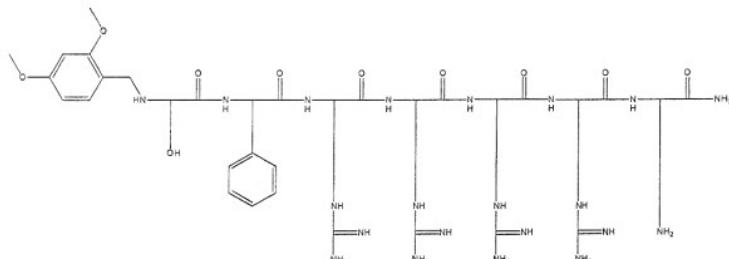


Compound 2

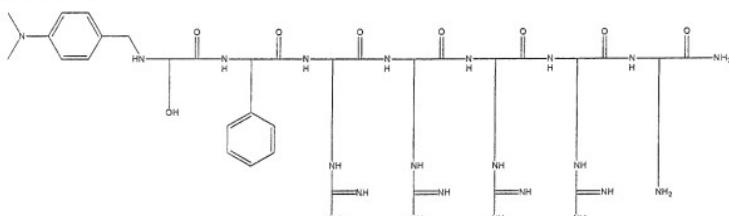


Compound 3

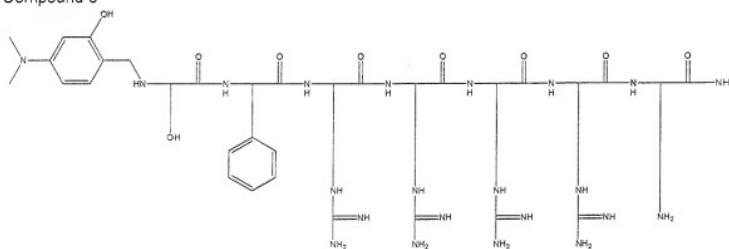
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Compound 4

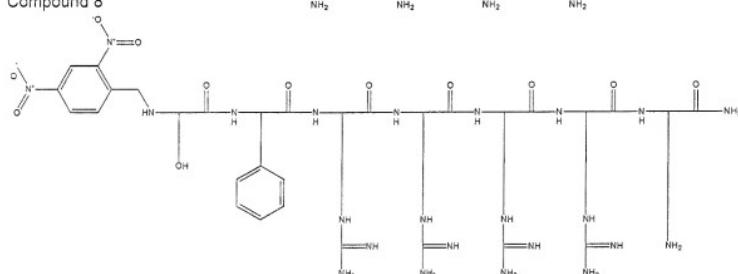
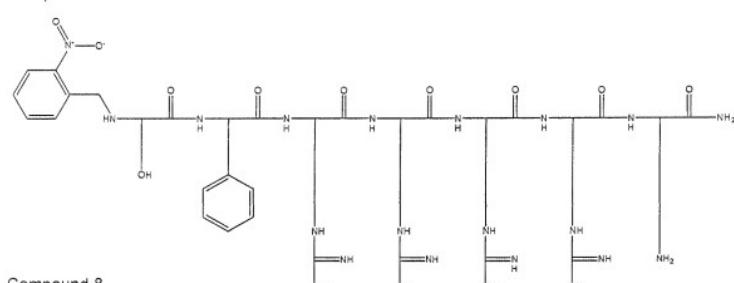
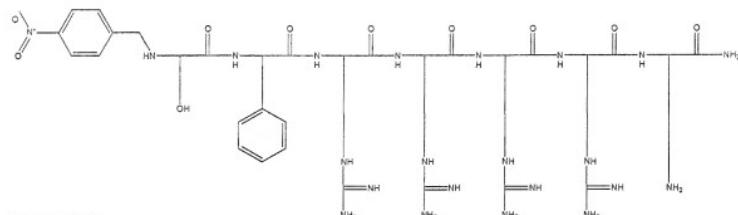


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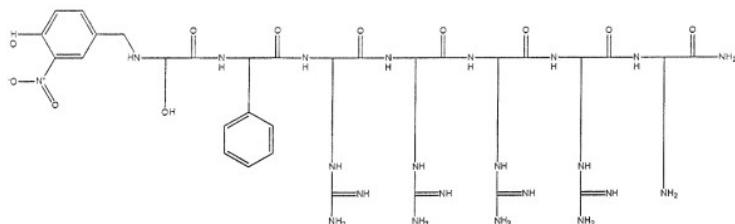


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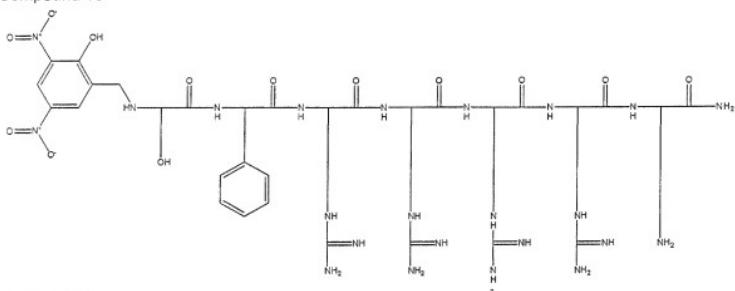
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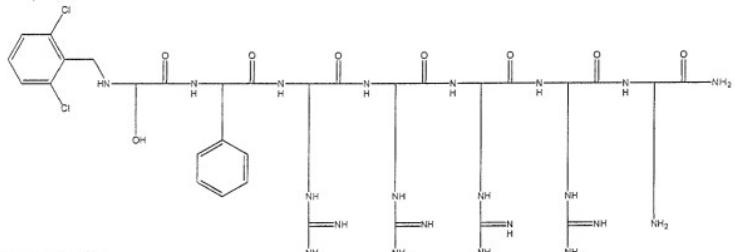
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Compound 10

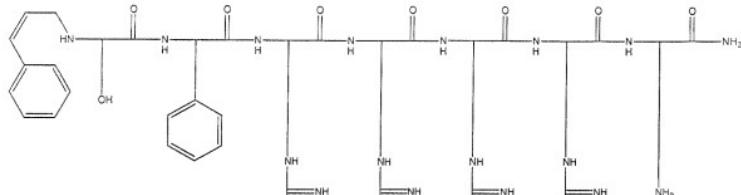


Compound 11

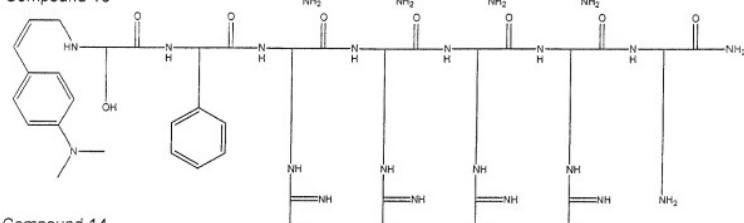


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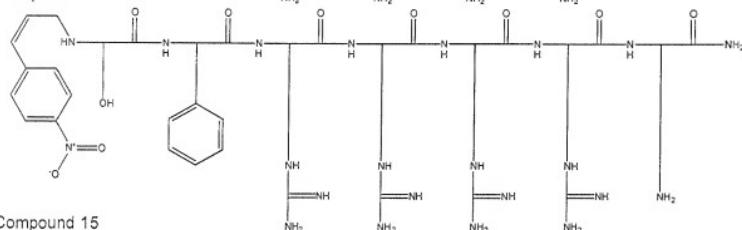
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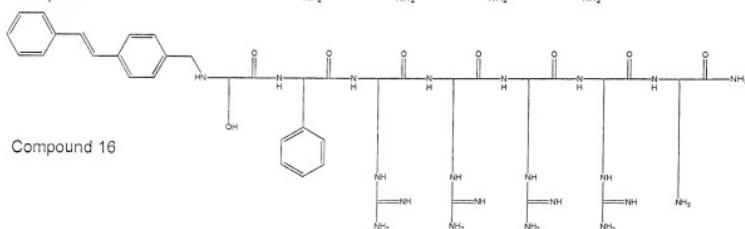
Compound 13



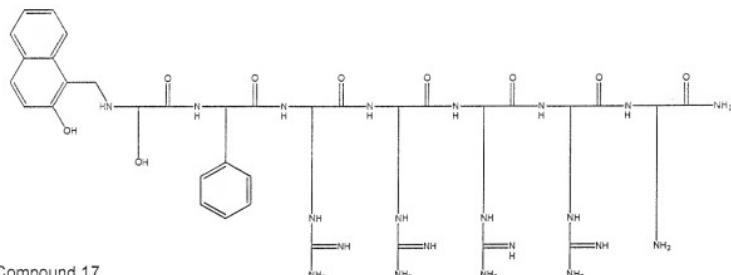
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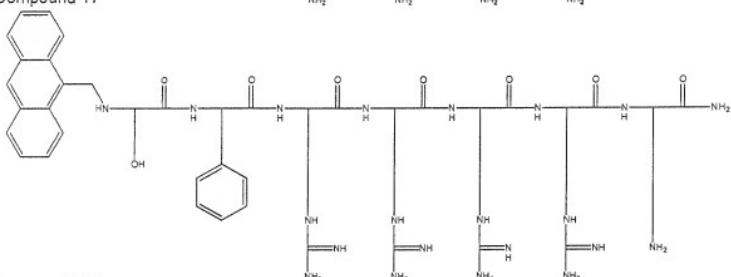
Compound 15



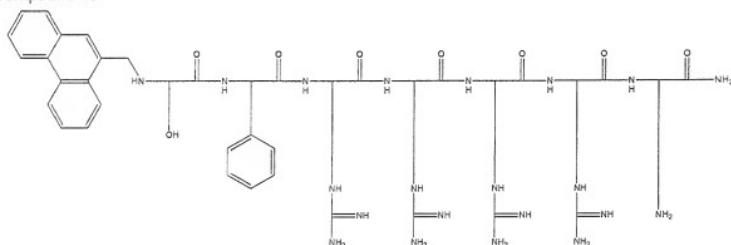
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Compound 17

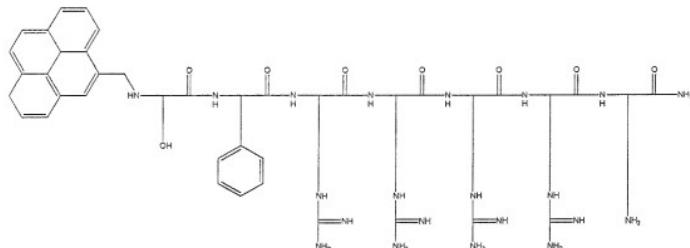


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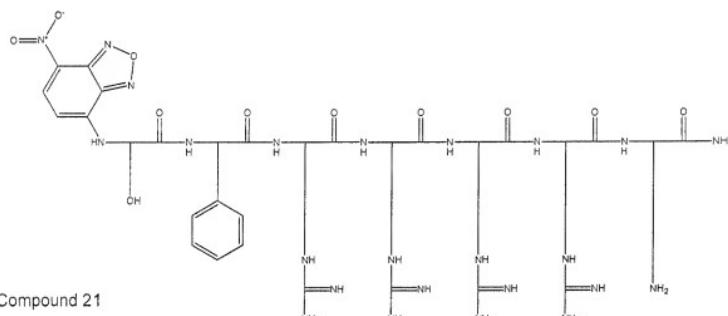


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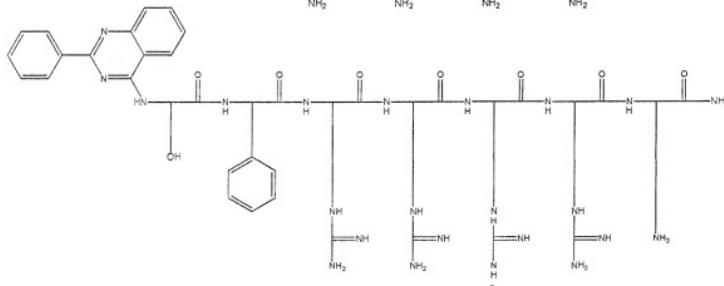
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Compound 20

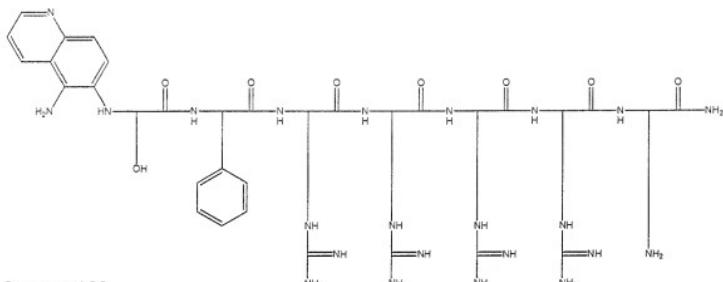


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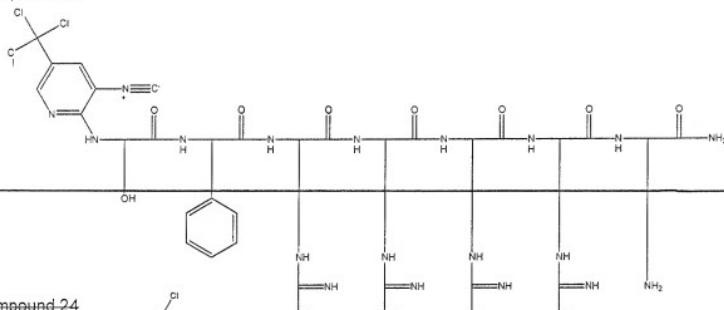


Compound 22

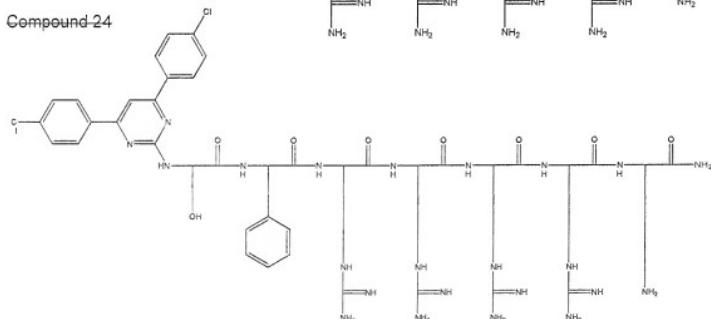
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Compound 23

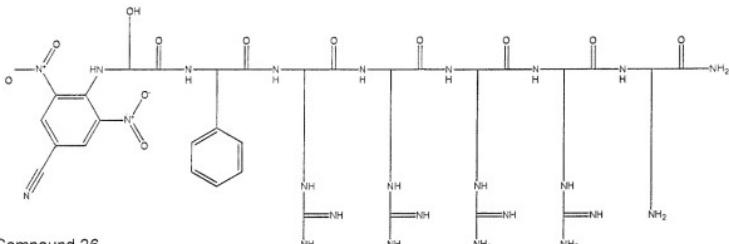


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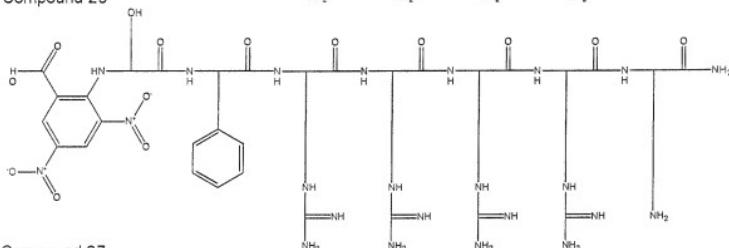


Compound 25

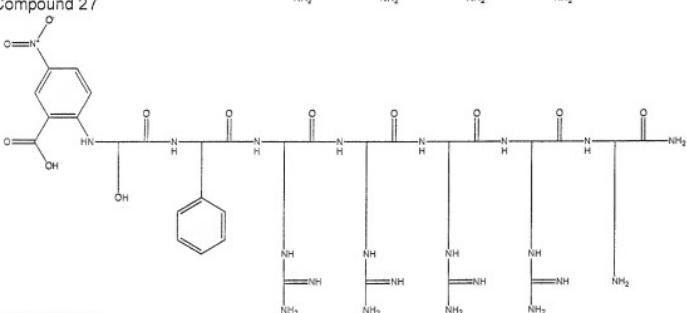
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Compound 26

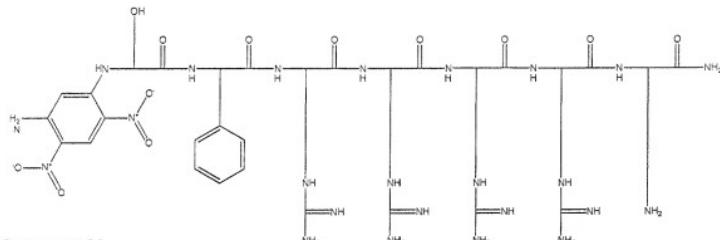


Compound 27

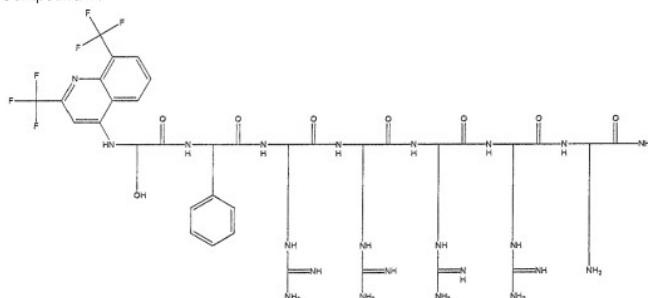


Compound 28

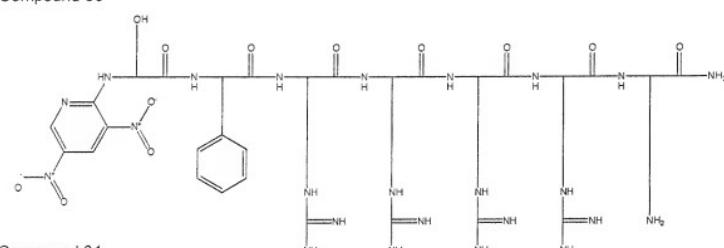
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Compound 29

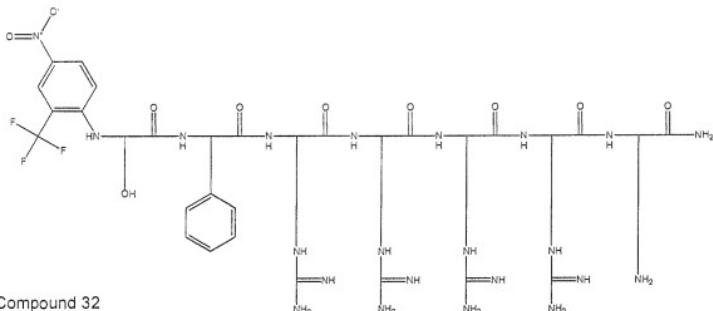


Compound 30

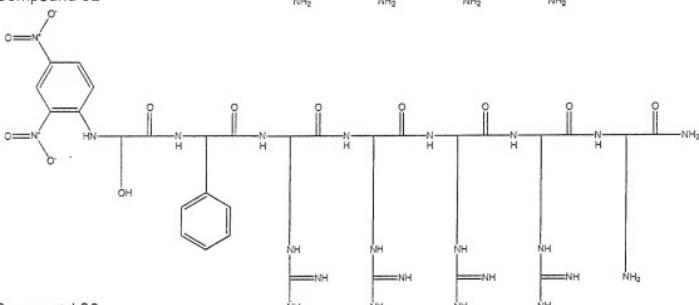


Compound 31

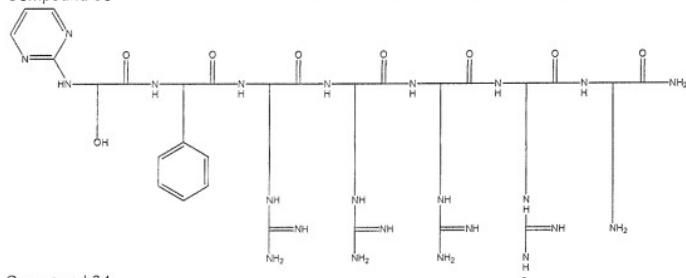
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Compound 32



Compound 33



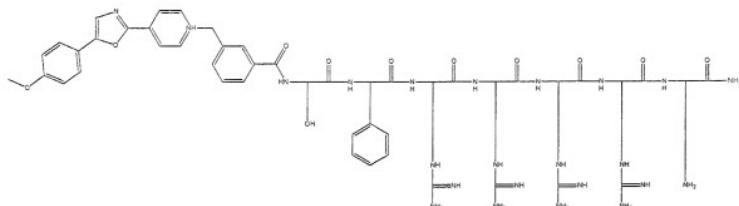
Compound 34

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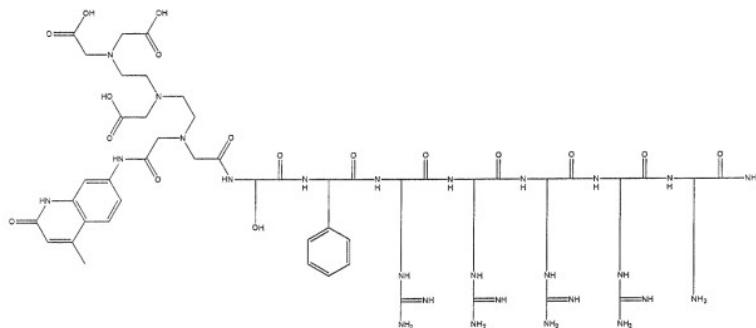
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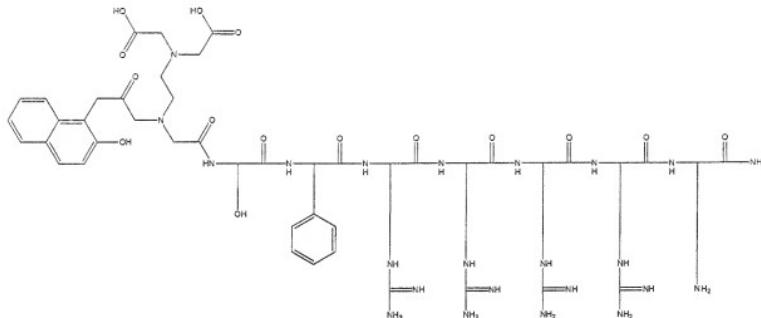


Compound 35

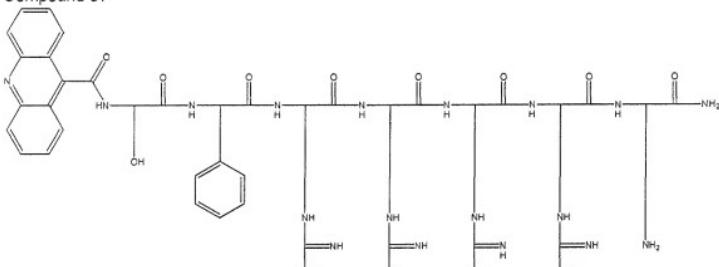


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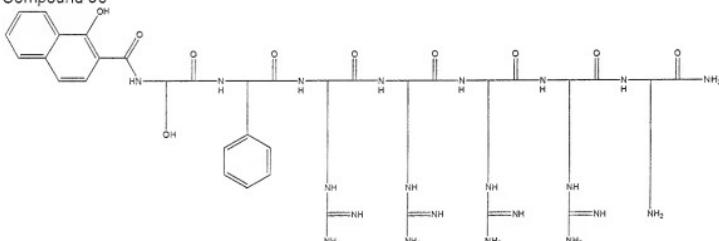
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Compound 37

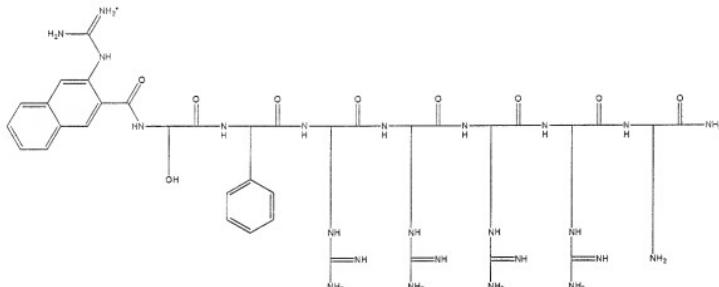


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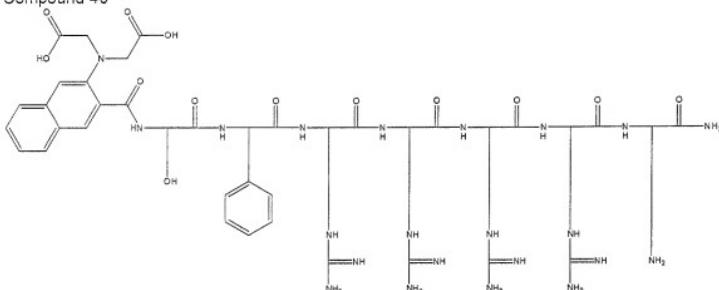


Compound 39

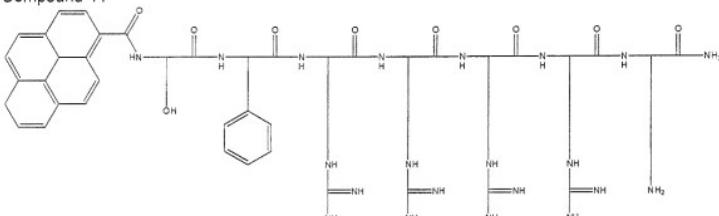
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Compound 40

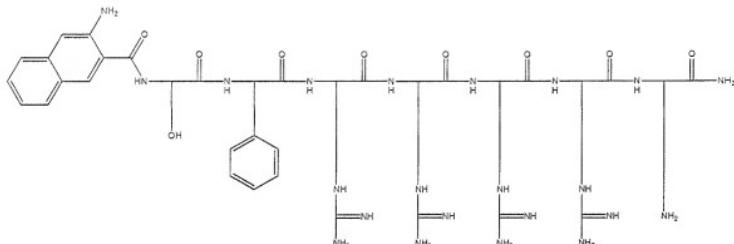


Compound 41



Compound 42

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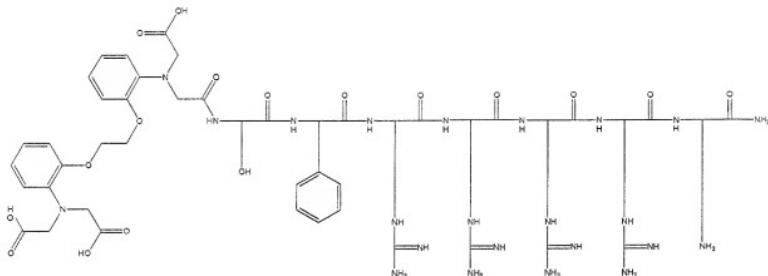


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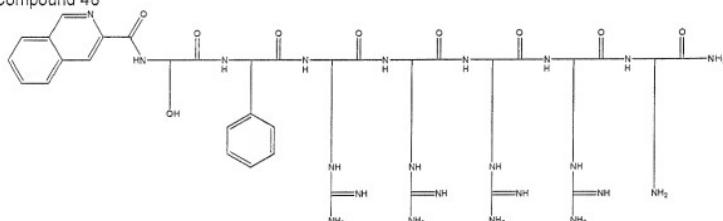
Compound 44

Compound 45

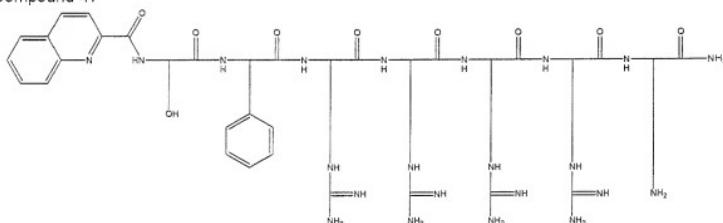
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Compound 46

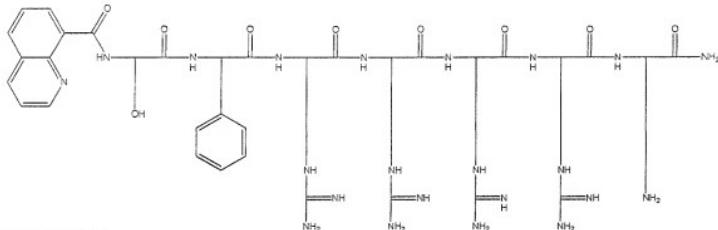


Compound 47

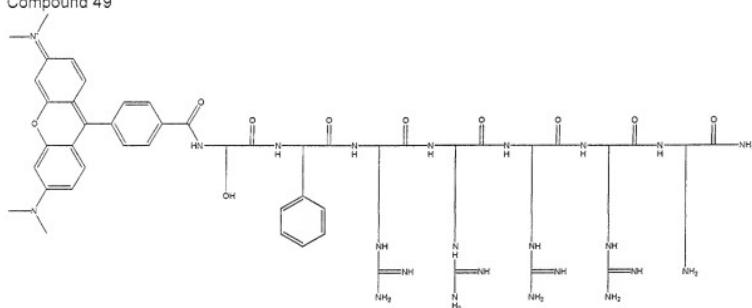


Compound 48

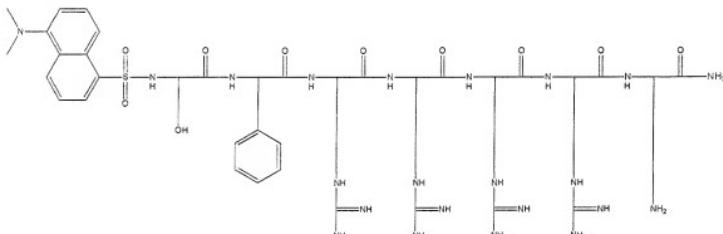
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Compound 49

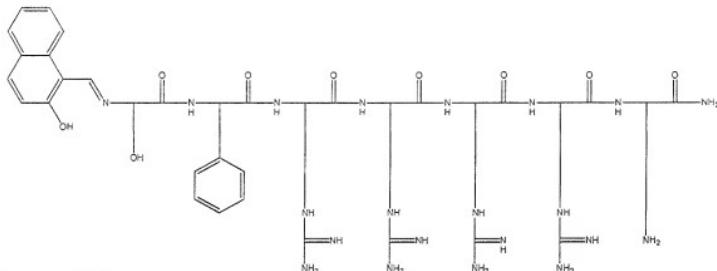


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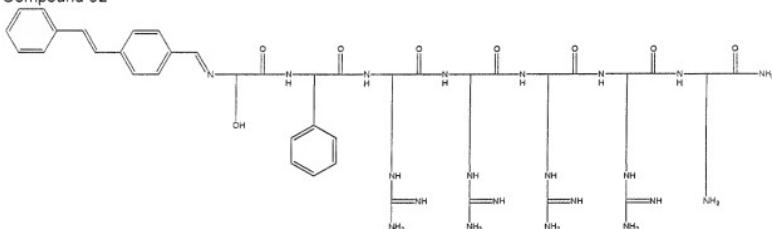


Compound 51

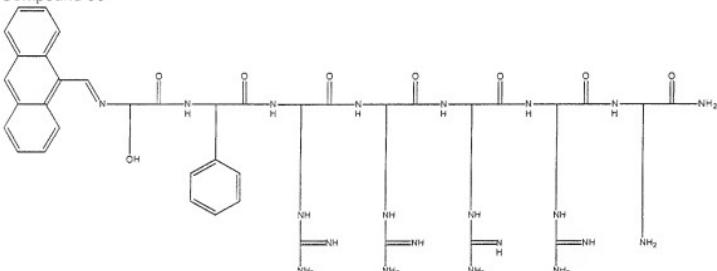
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Compound 52

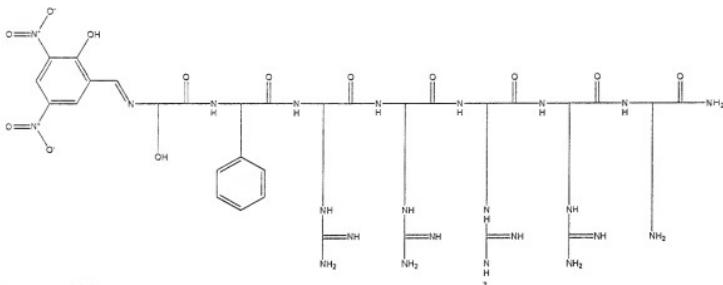


Compound 53

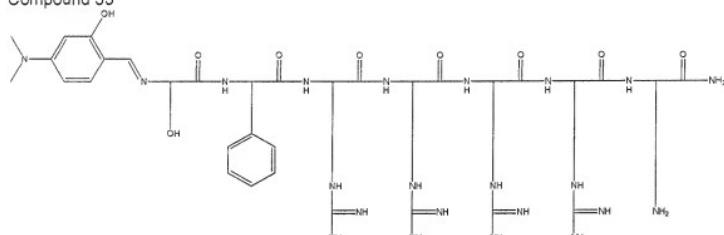


Compound 54

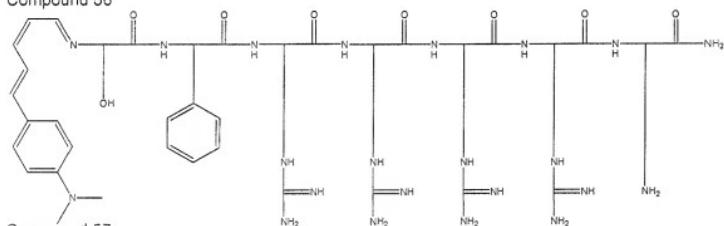
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Compound 55

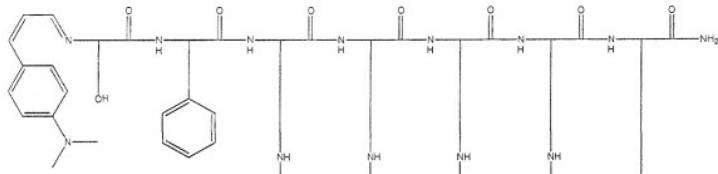


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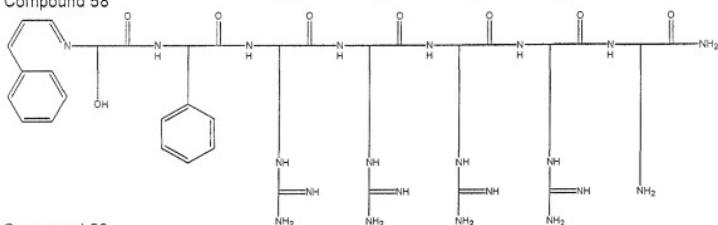


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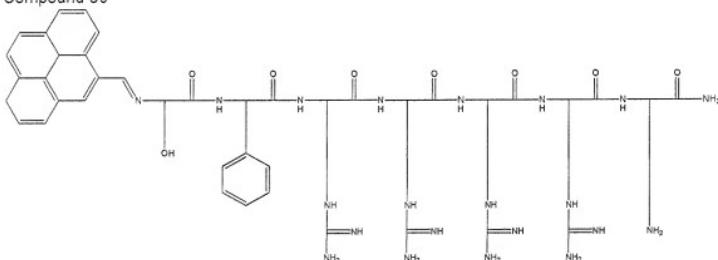
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Compound 58

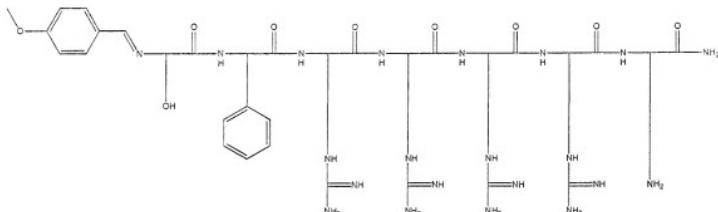


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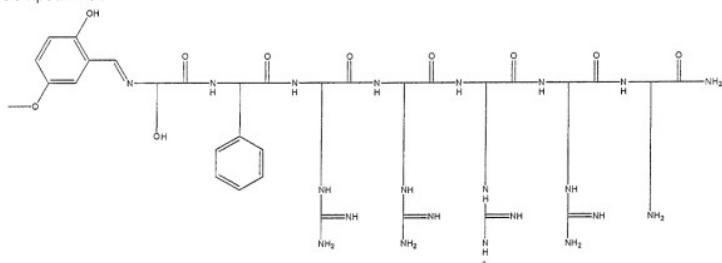


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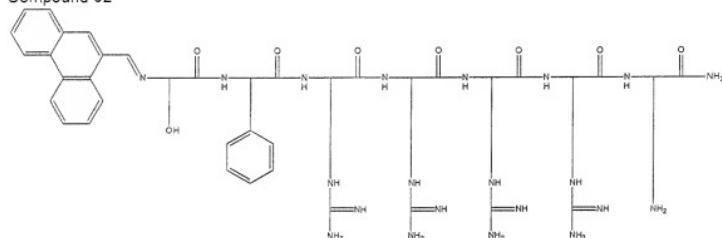
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Compound 61

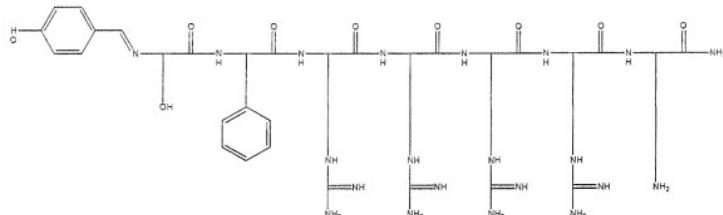


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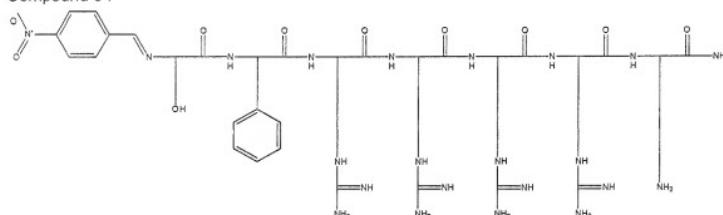


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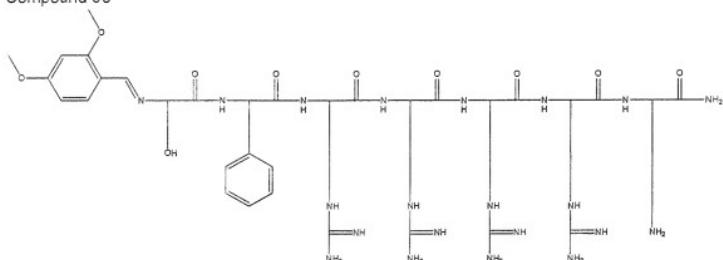
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Compound 64

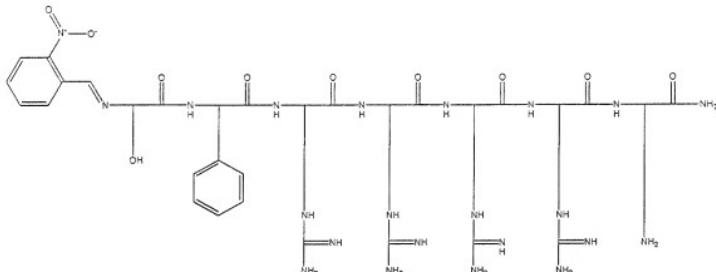


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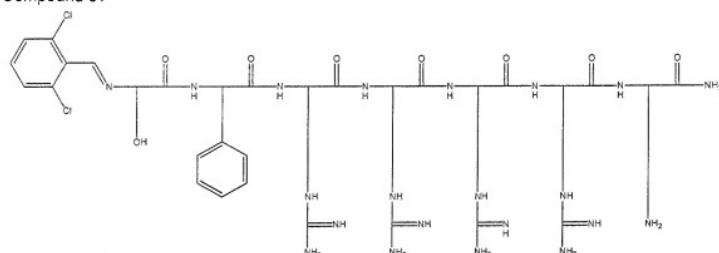


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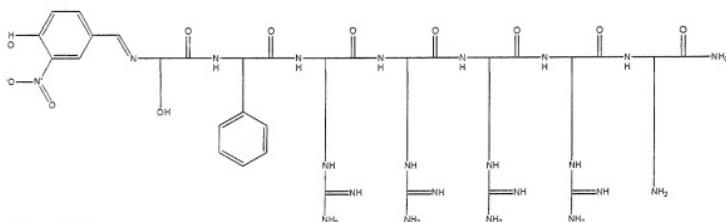
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Compound 67

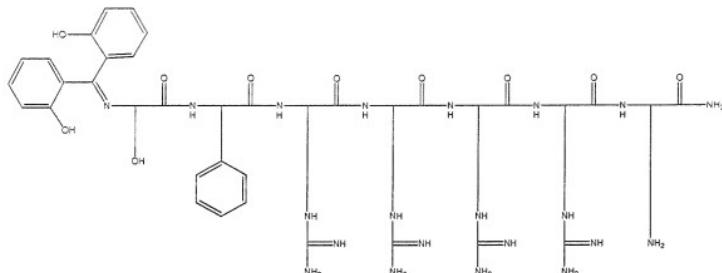


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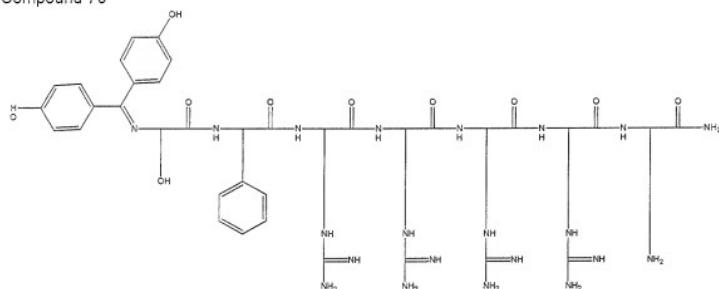


Compound 69

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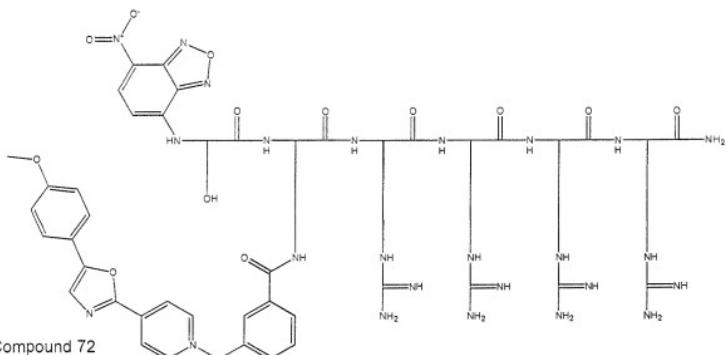


Compound 70

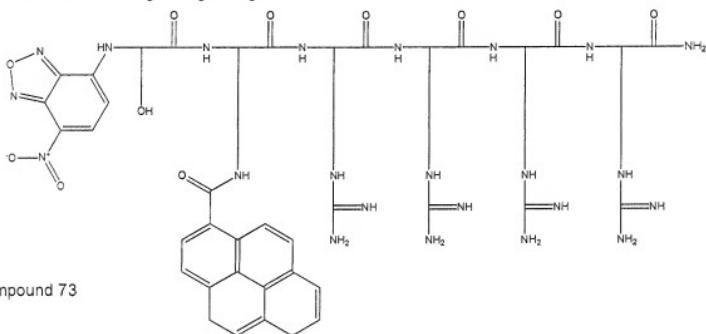


Compound 71

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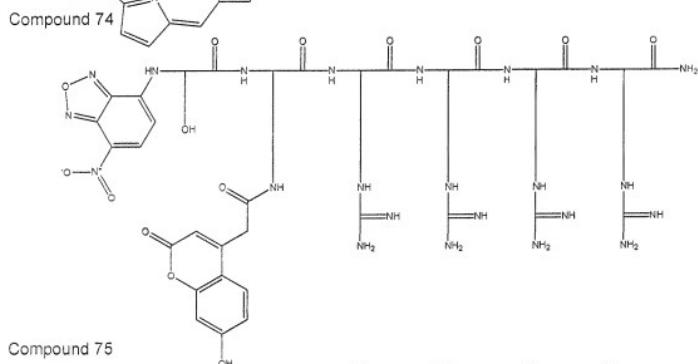
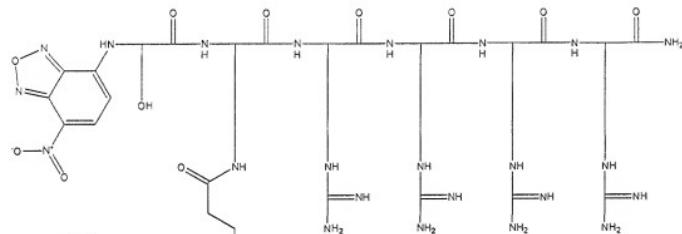


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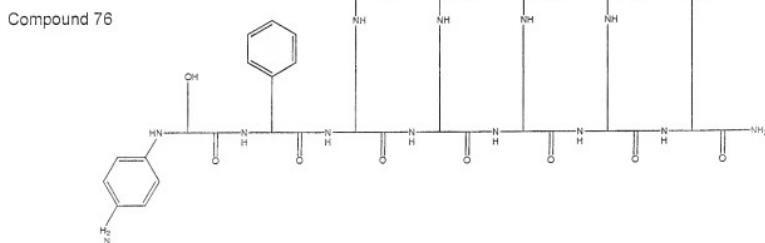


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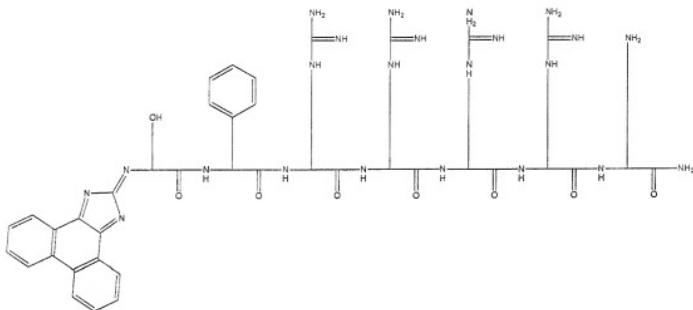
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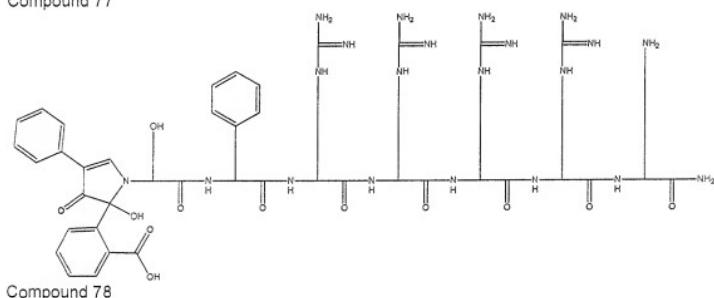
Compound 75



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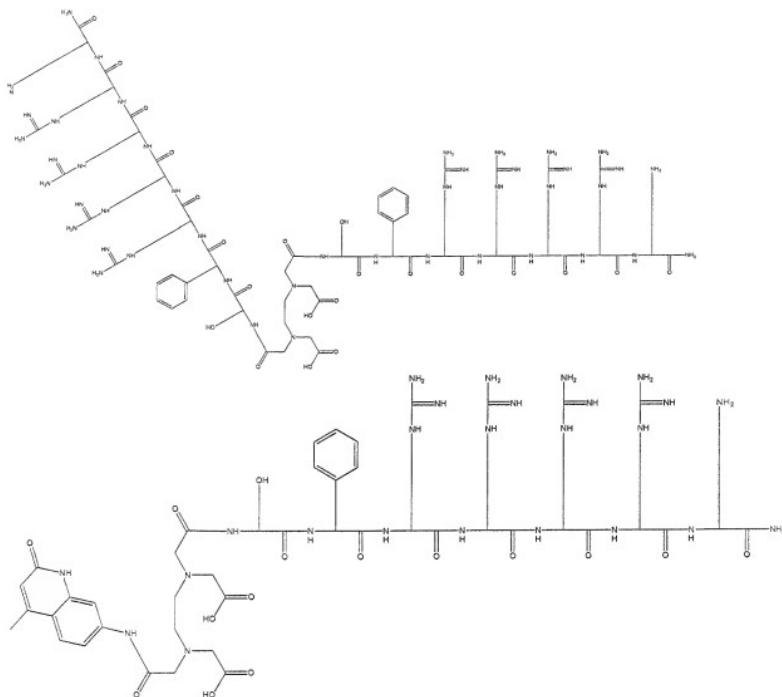
Compound 77



Compound 78

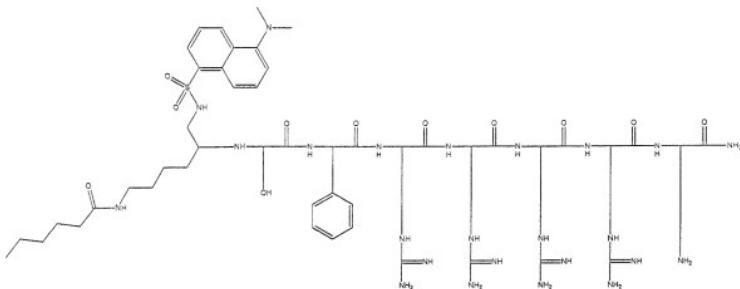
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Compound 79



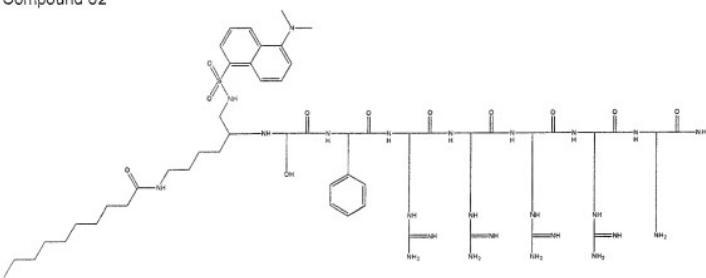
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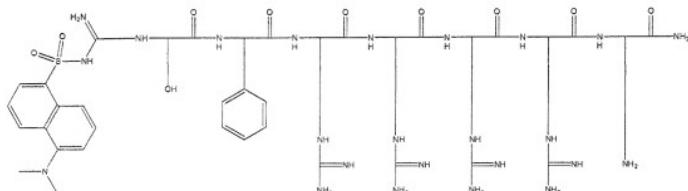
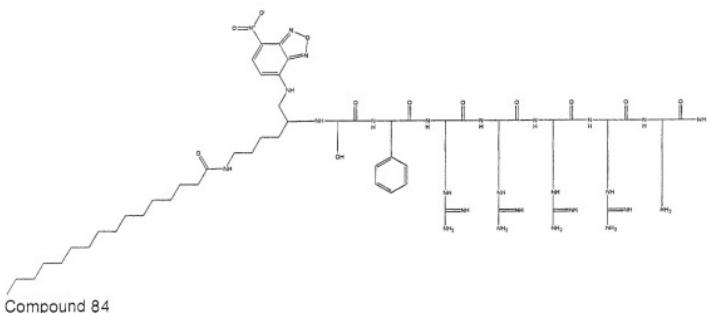
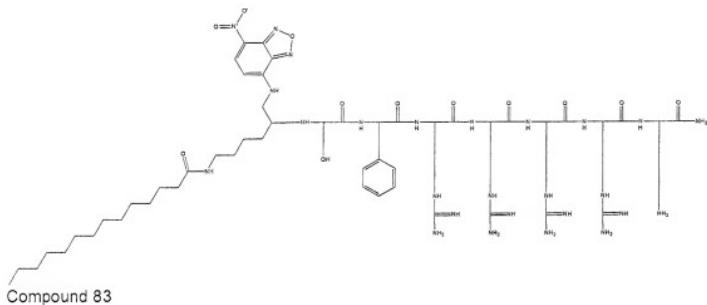


Compound 81

Compound 82

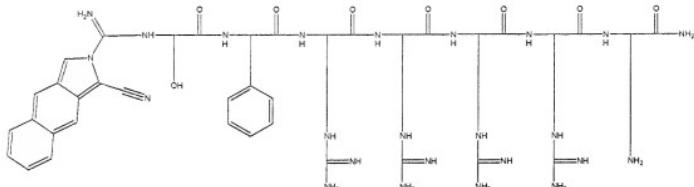


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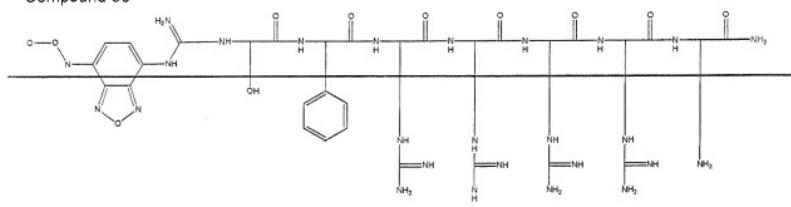


Compound 85

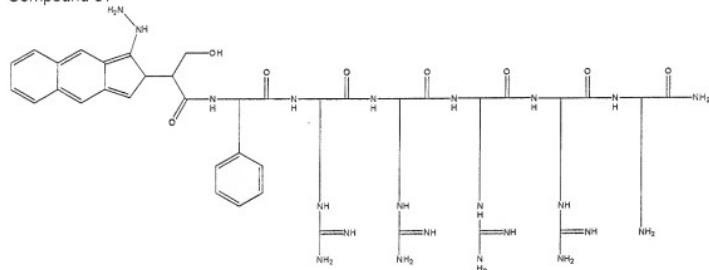
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Compound 86

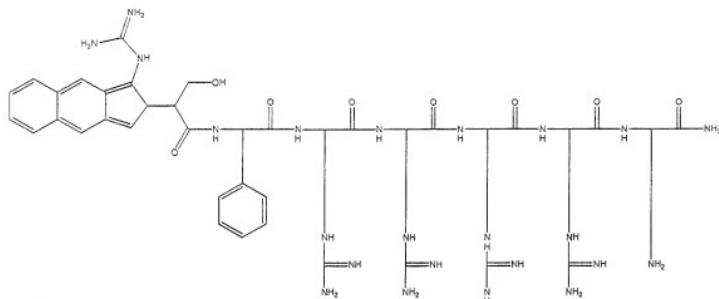


Compound 87

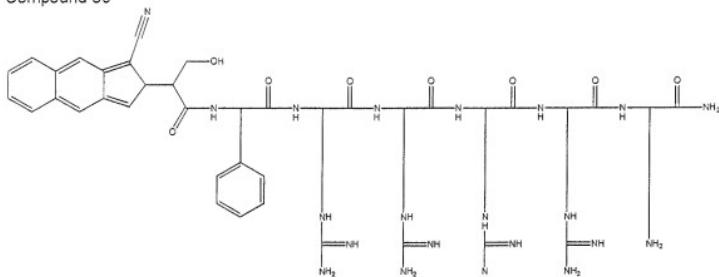


Compound 88

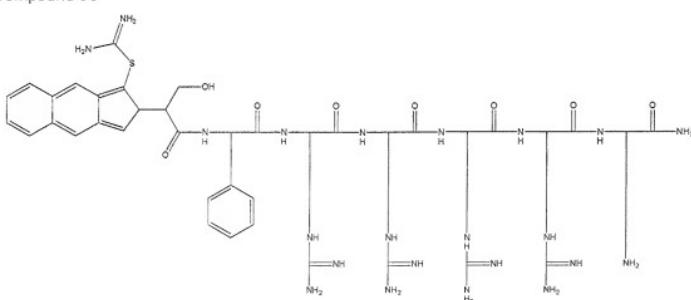
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Compound 89

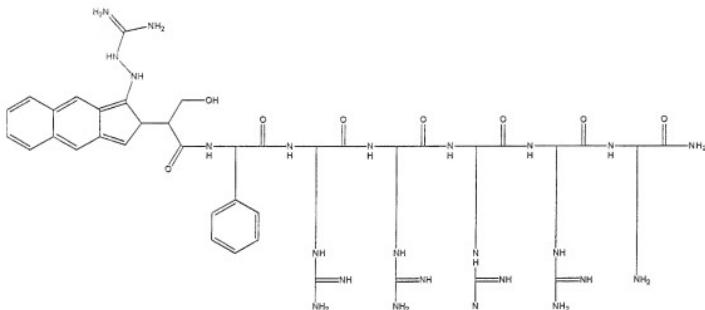


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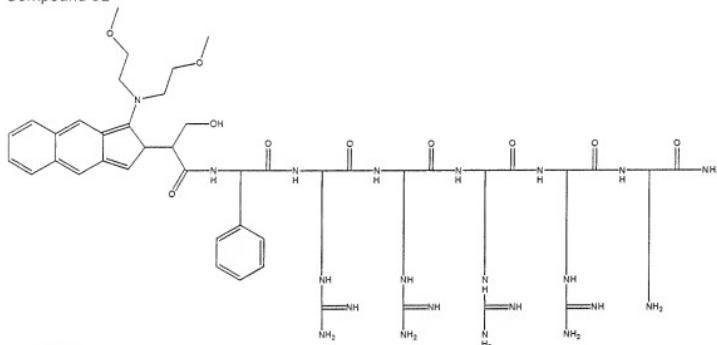


Compound 91

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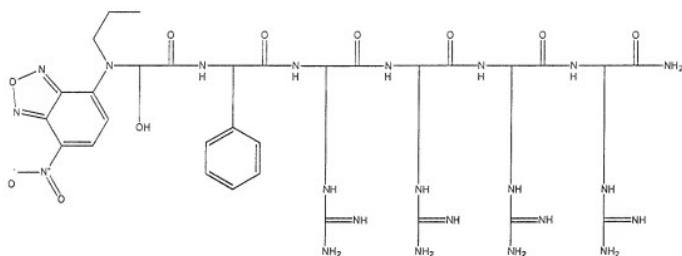


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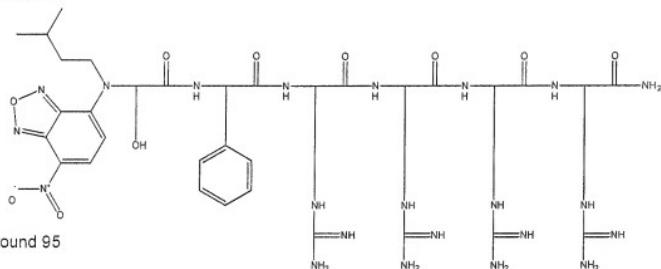


Compound 93

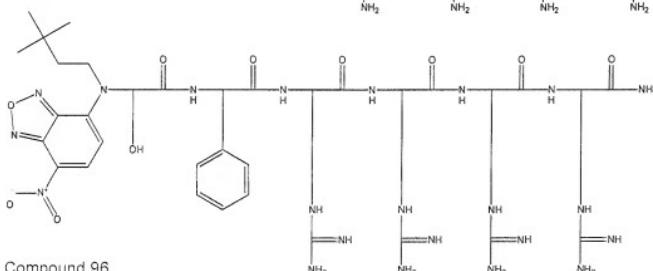
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Compound 94

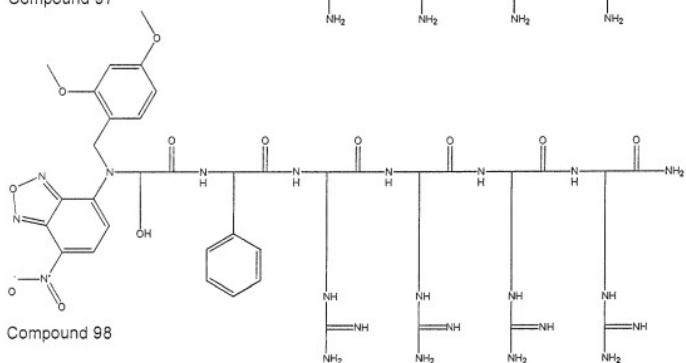
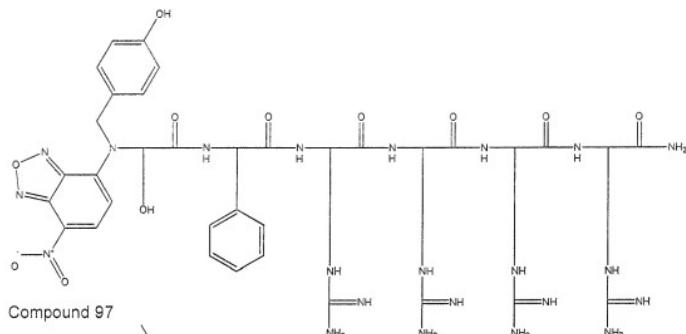


Compound 95

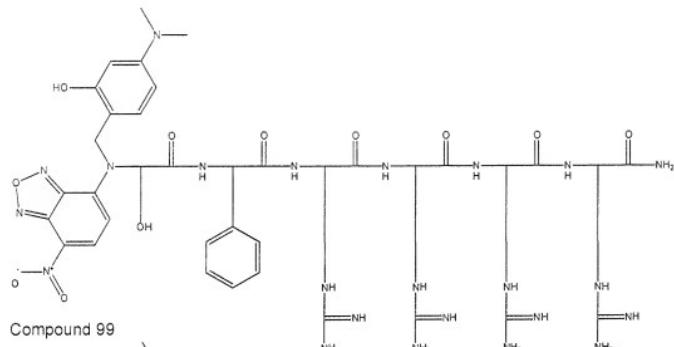


Compound 96

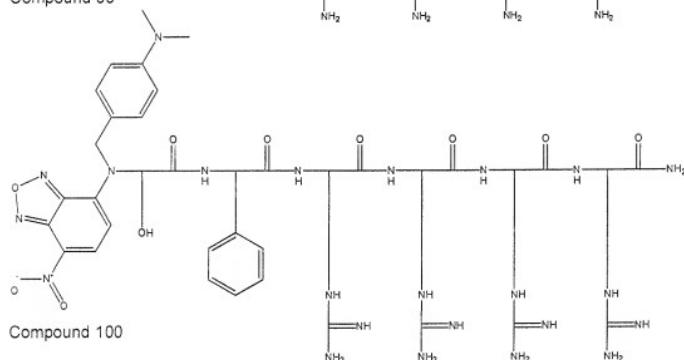
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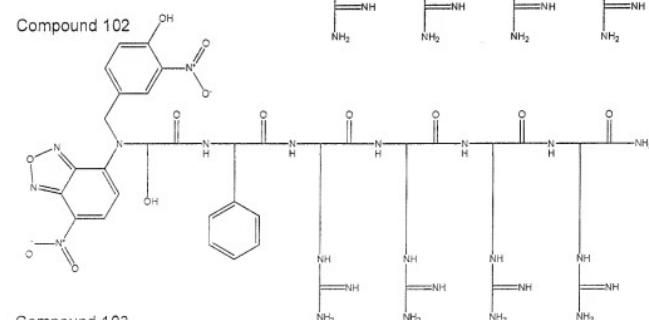
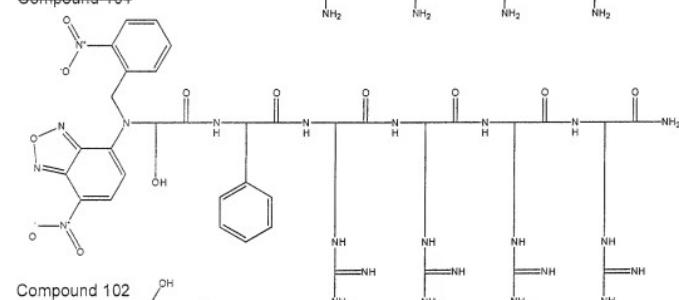
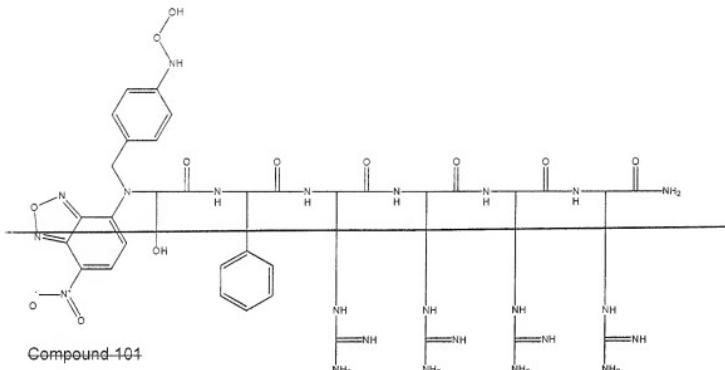


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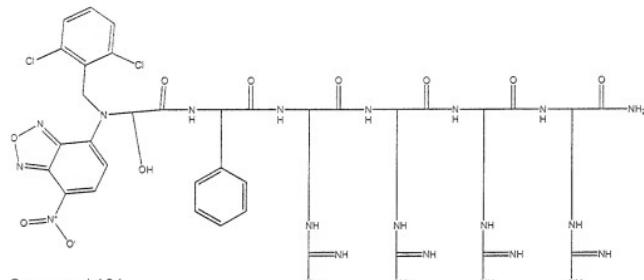


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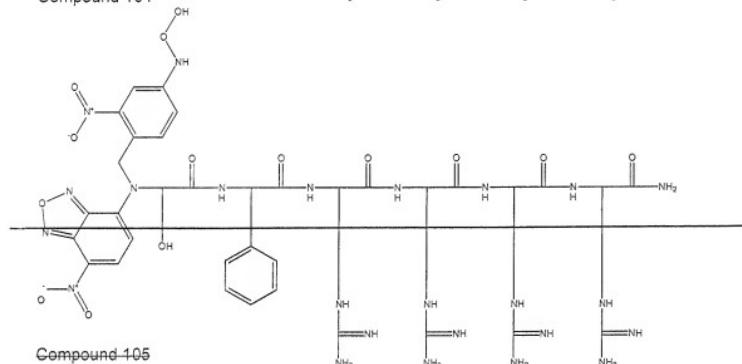
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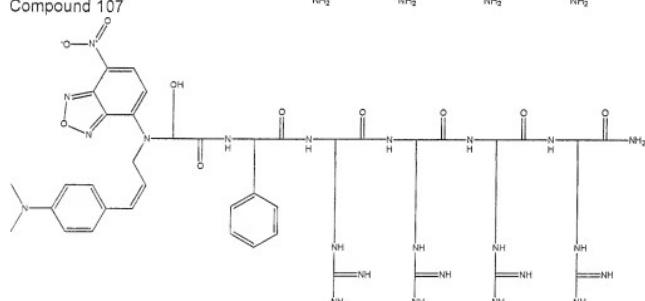
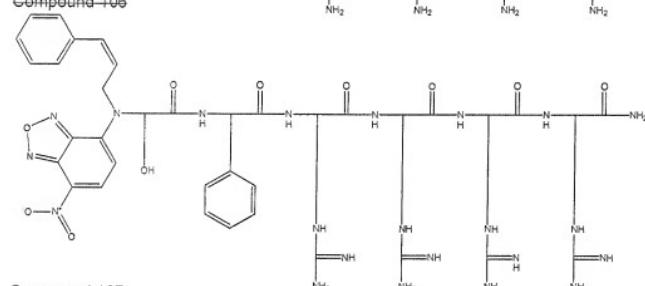
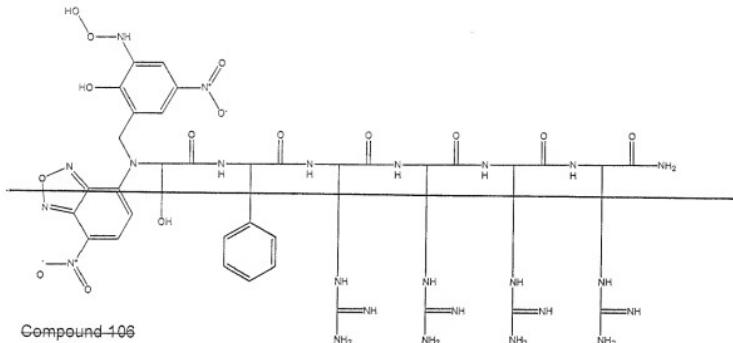


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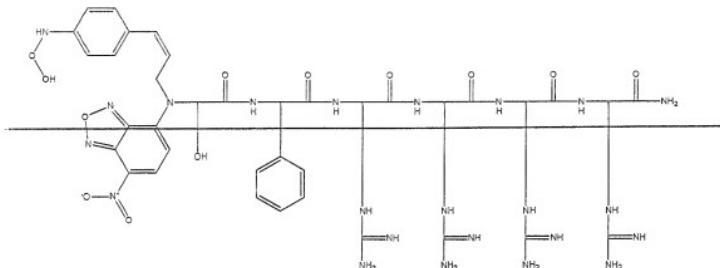


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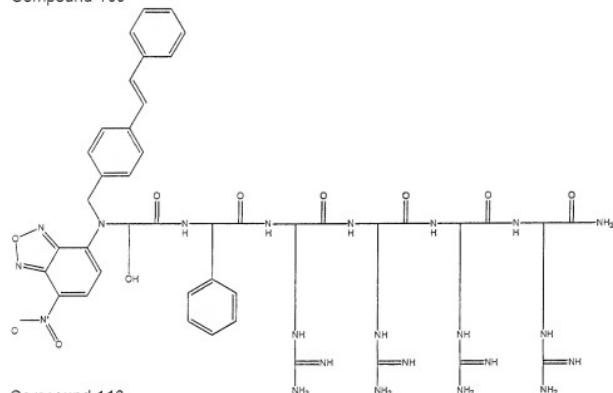
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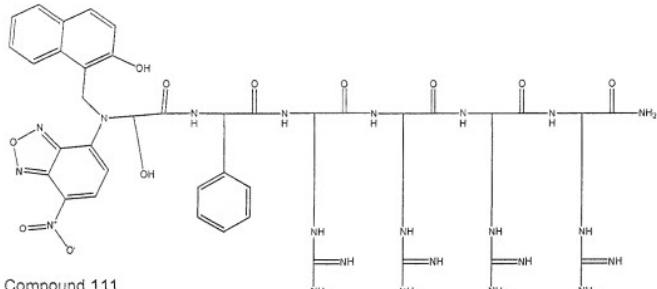


Compound 109

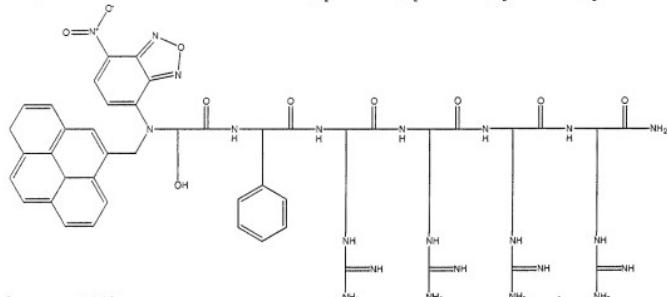


Compound 110

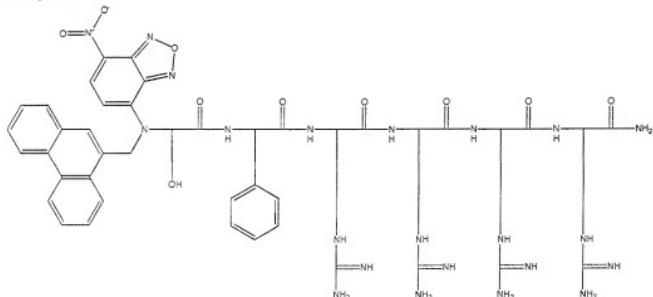
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Compound 111

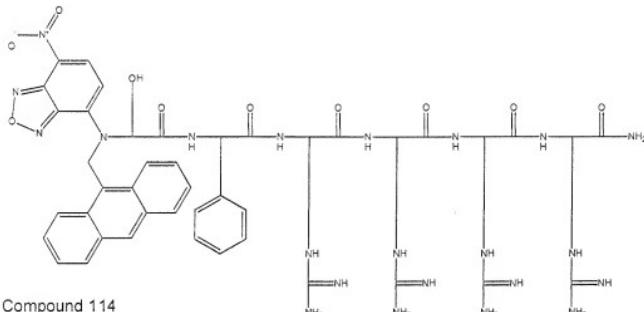


Compound 112

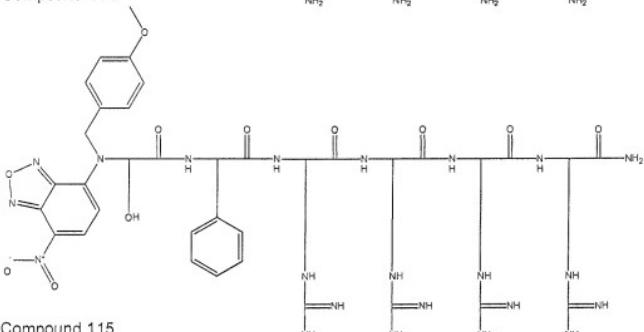


Compound 113

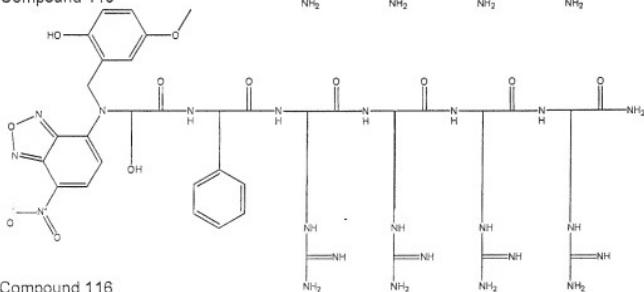
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Compound 114

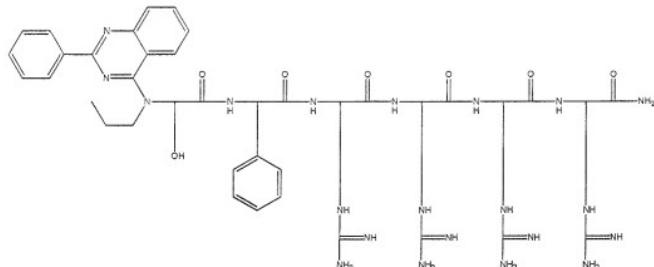


Compound 115

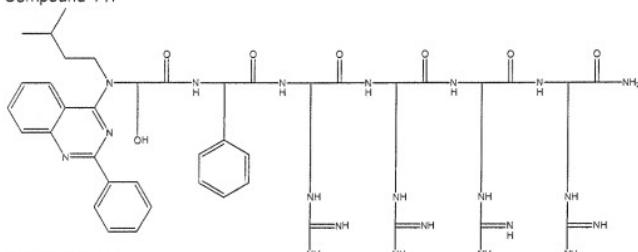


Compound 116

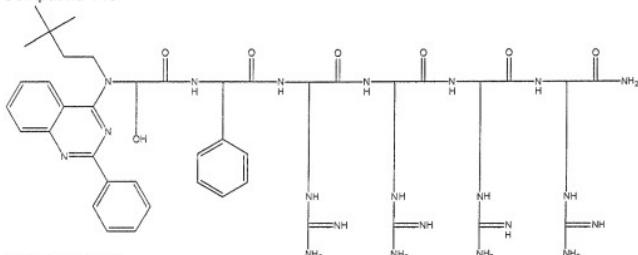
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Compound 117

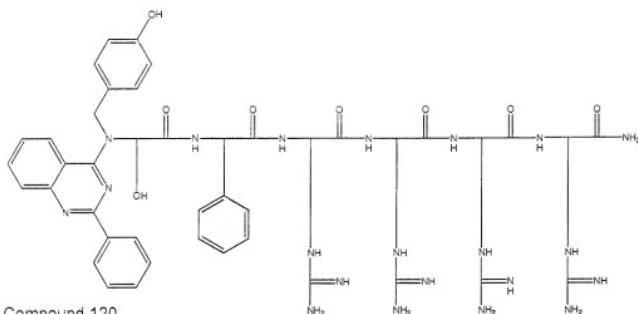


Compound 118

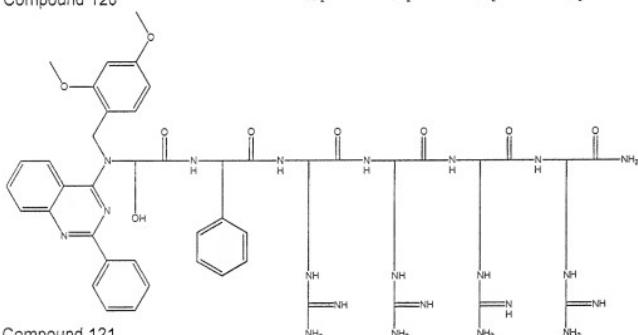


Compound 119

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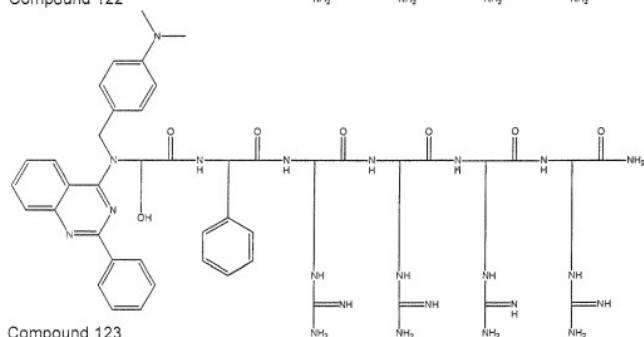
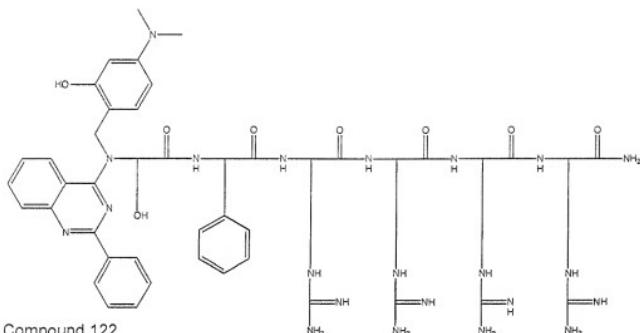


Compound 120

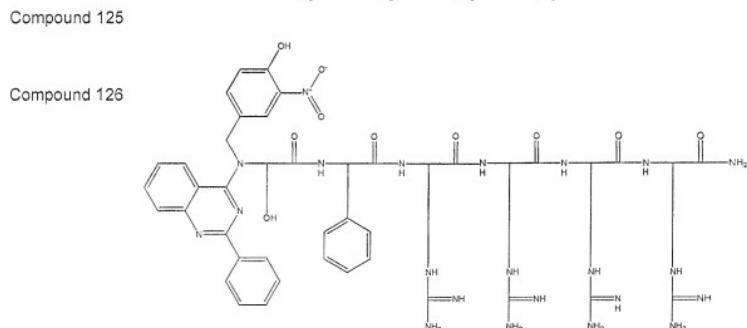
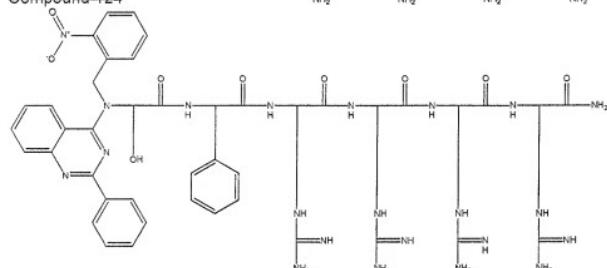
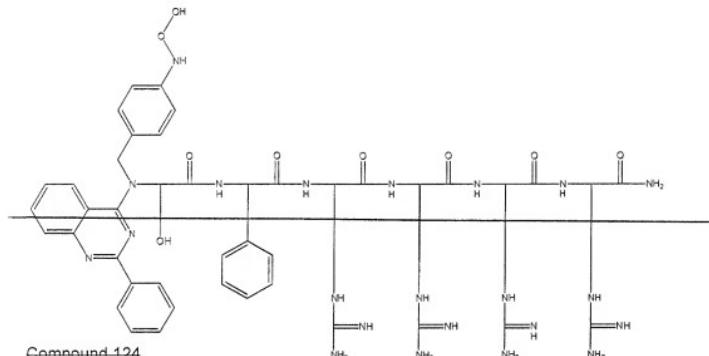


Compound 121

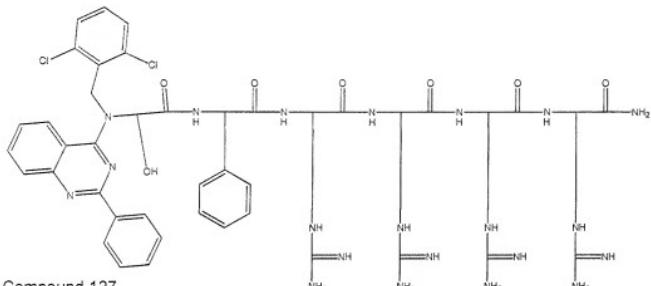
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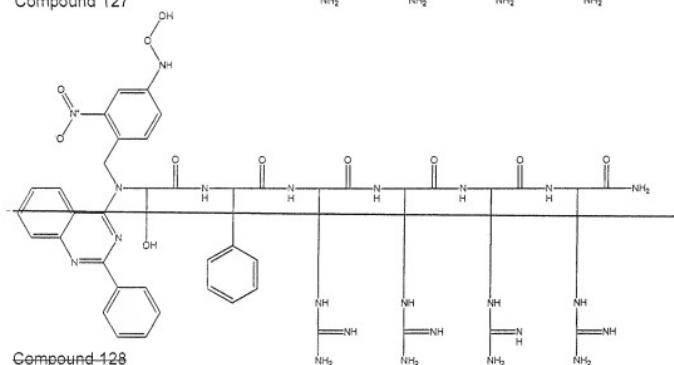
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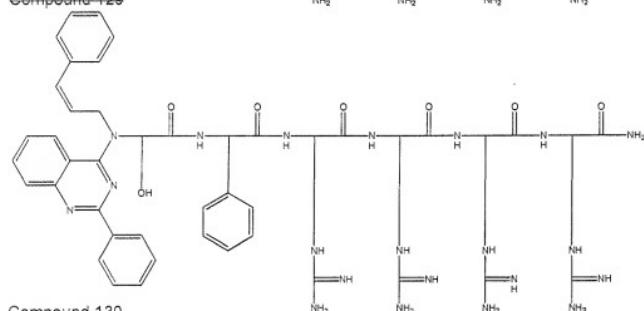
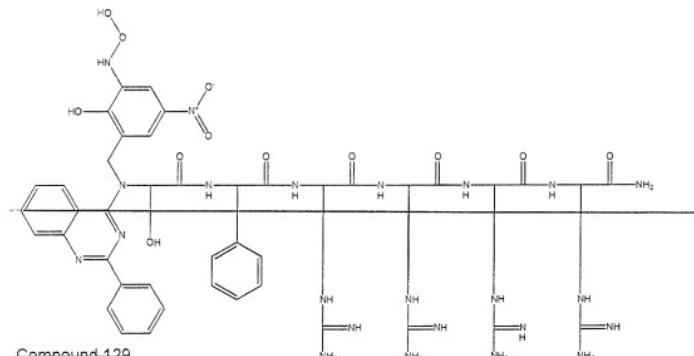


Compound 127

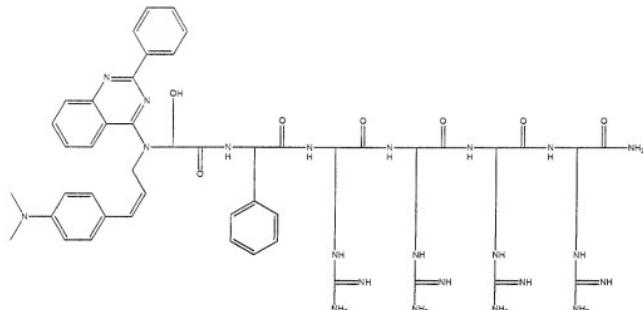


Compound 128

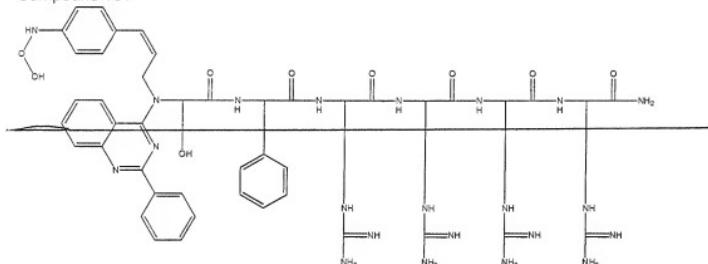
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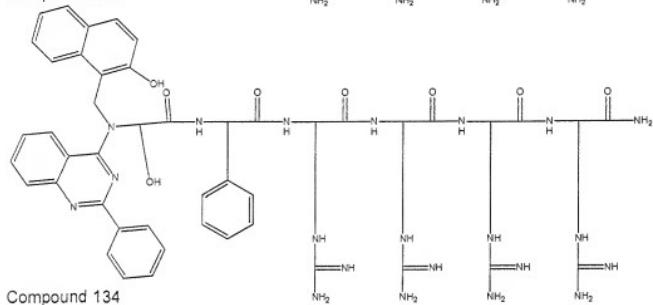
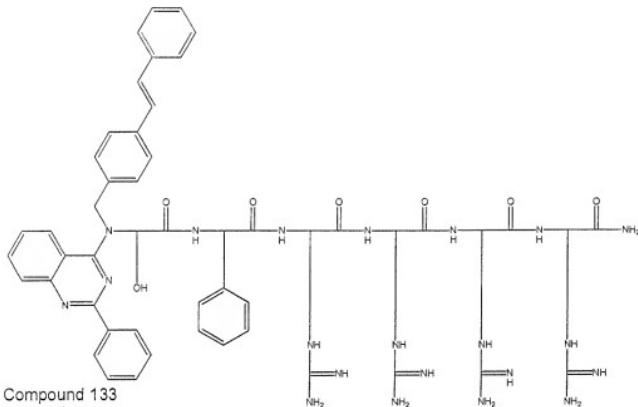


Compound 131

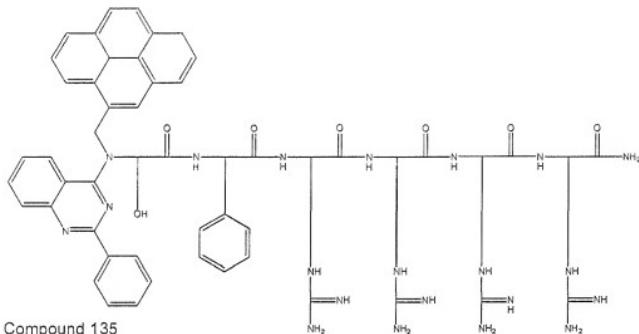


Compound 132

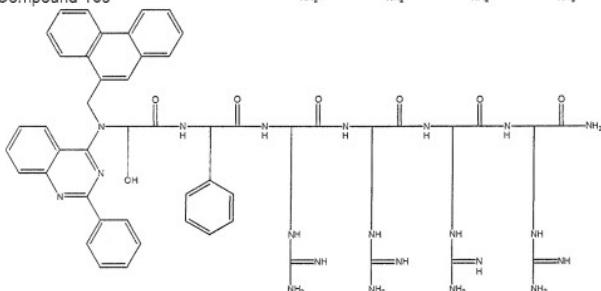
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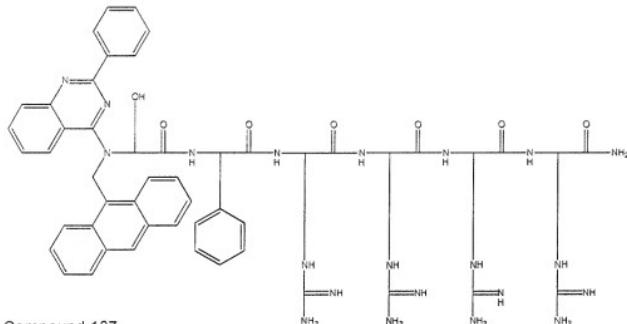


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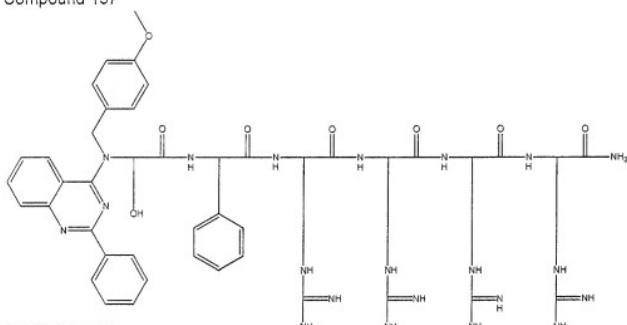


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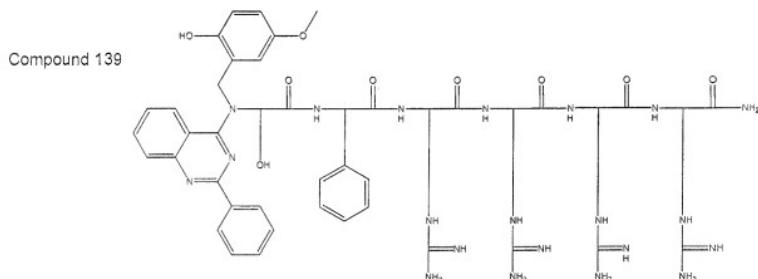
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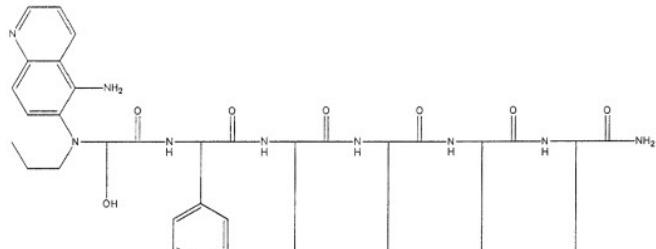
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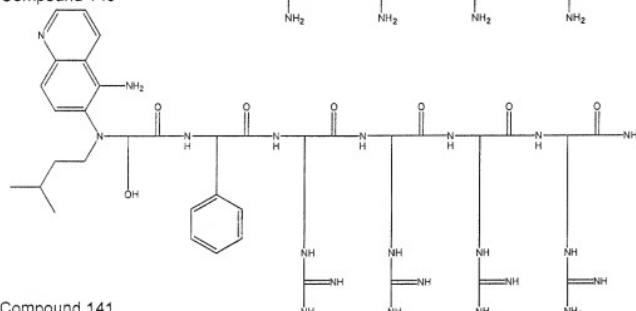
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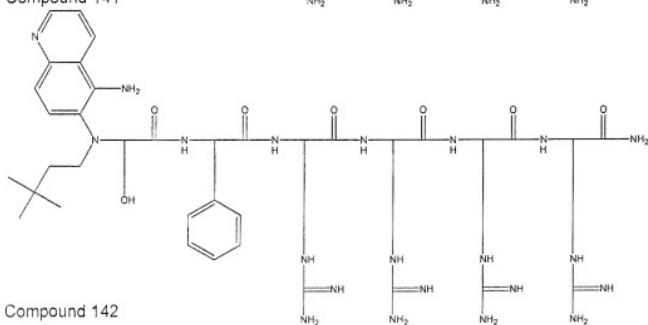
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Compound 140

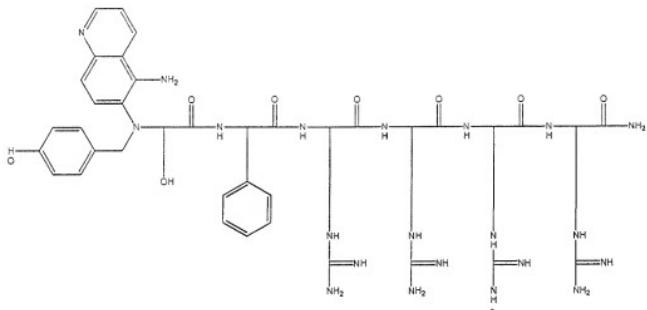


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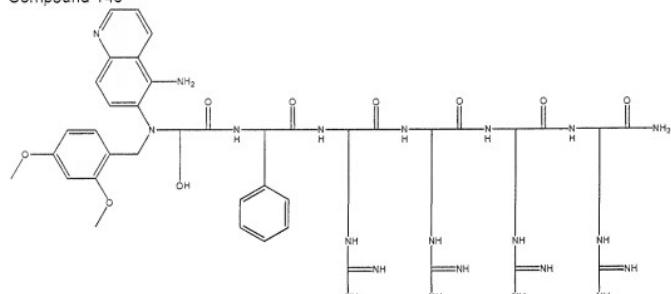


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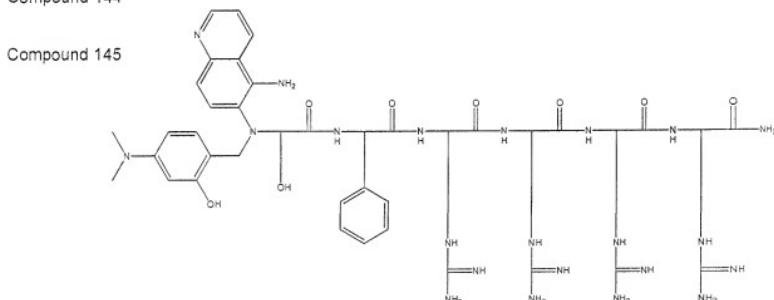
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Compound 143

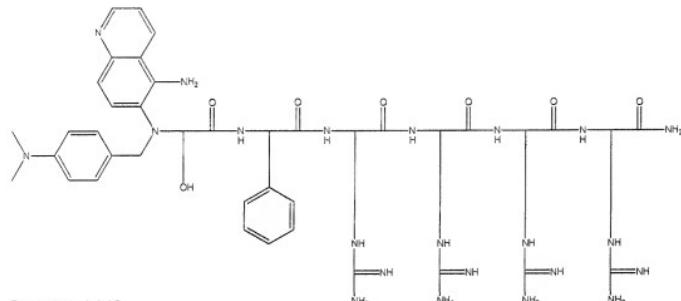


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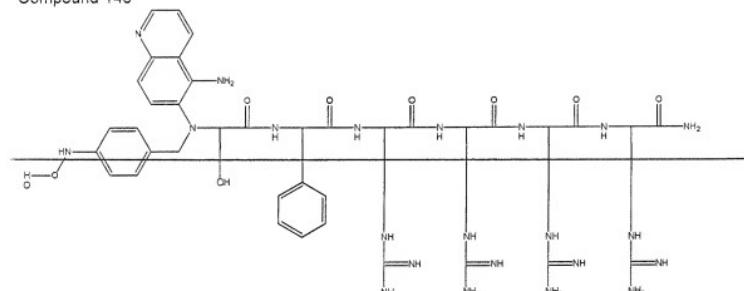


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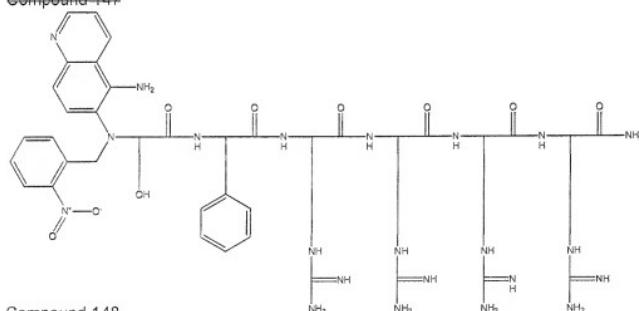
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Compound 146

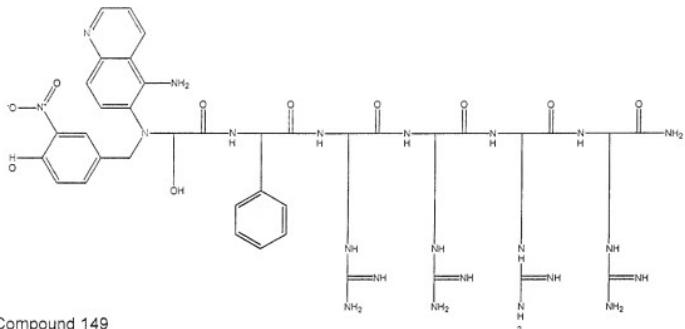


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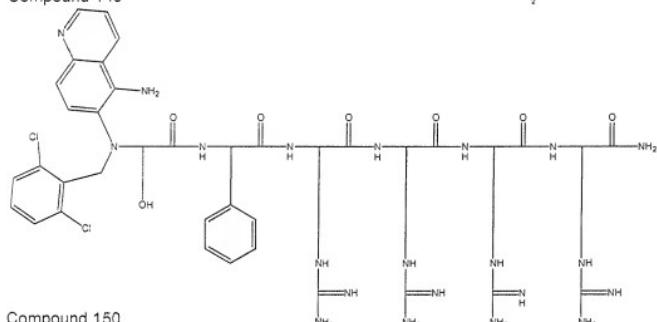


Compound 148

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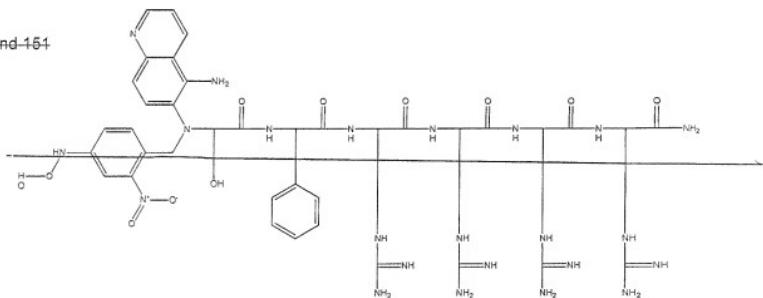


Compound 149

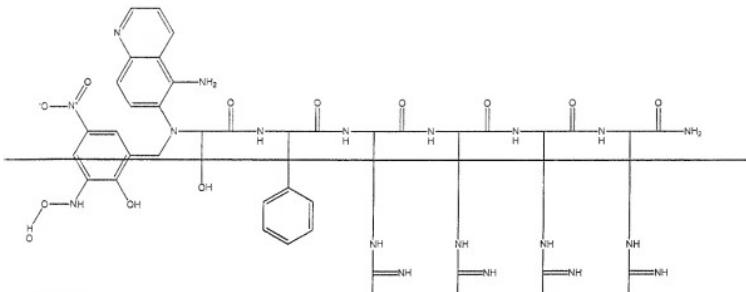


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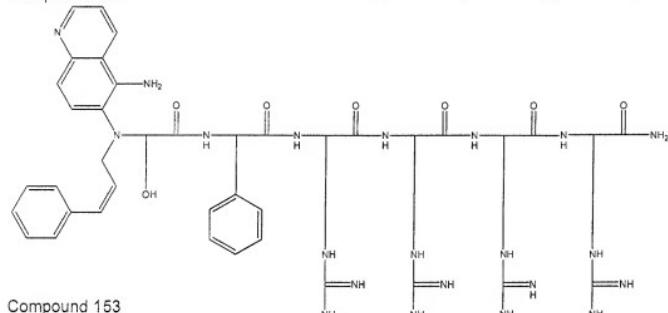
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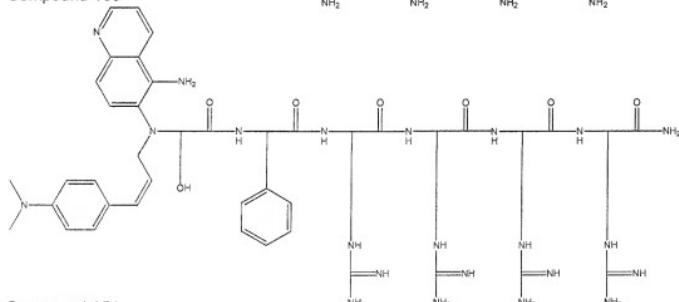
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Compound 152

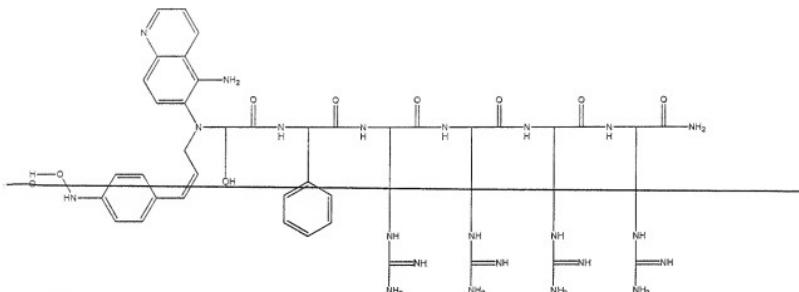


Compound 153

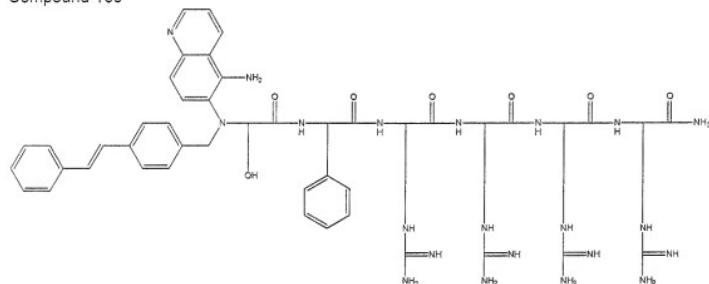


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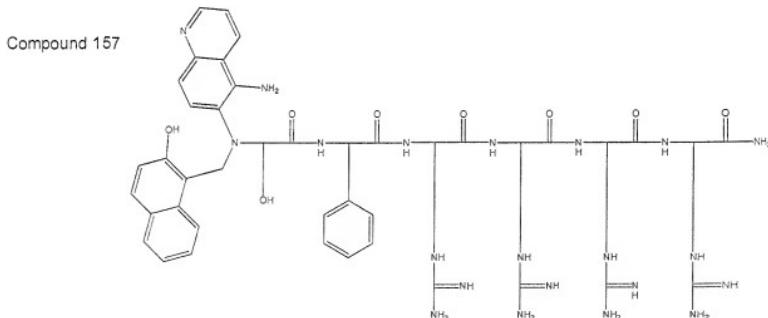
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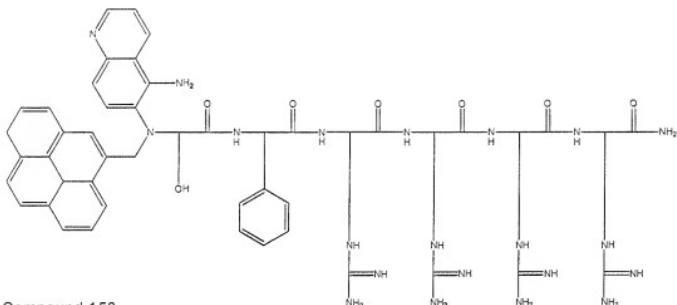
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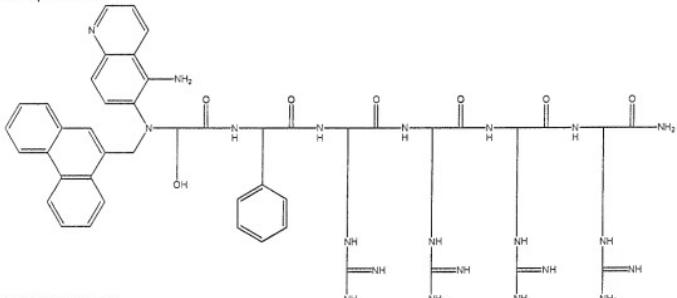
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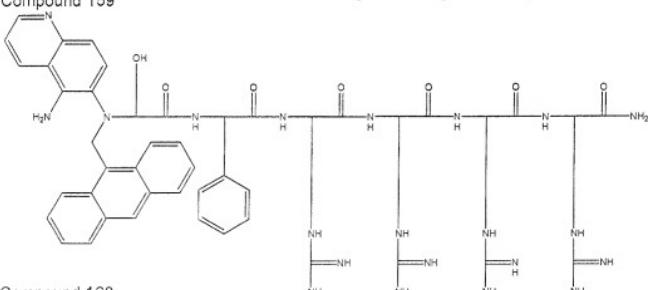
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Compound 158

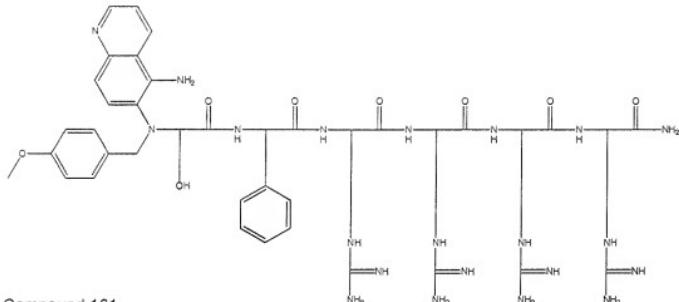


Compound 159

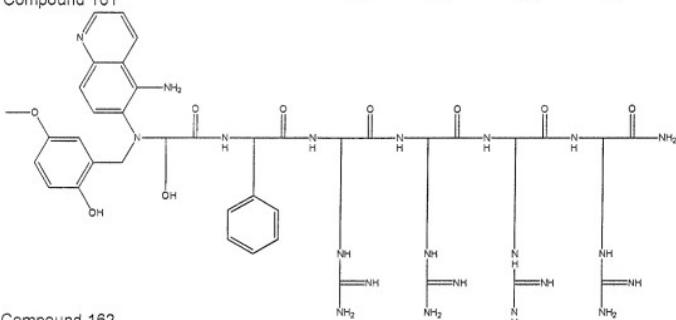


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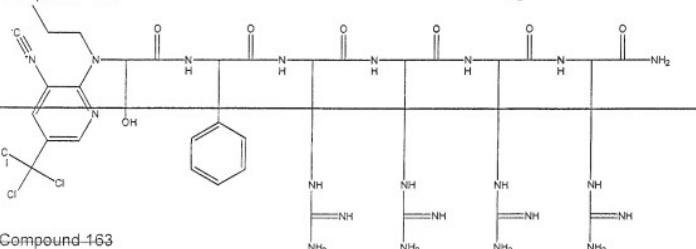
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Compound 161



Compound 162



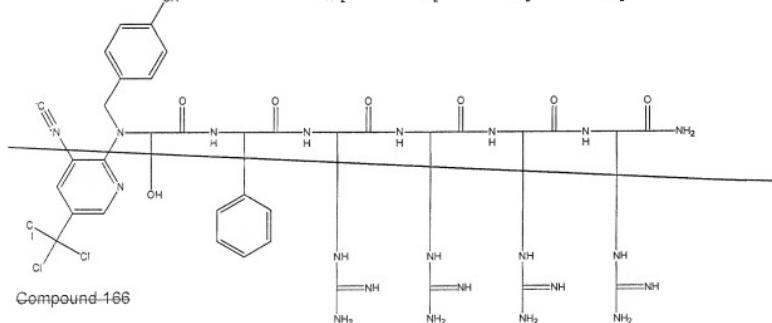
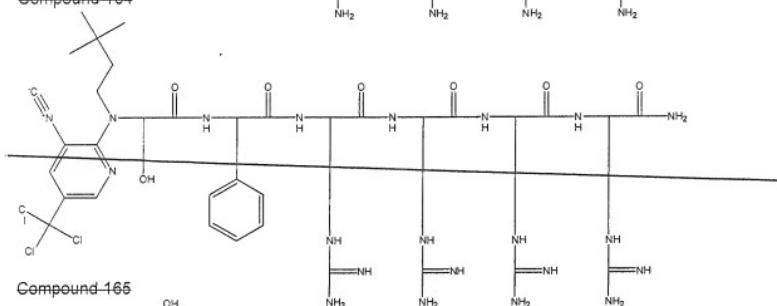
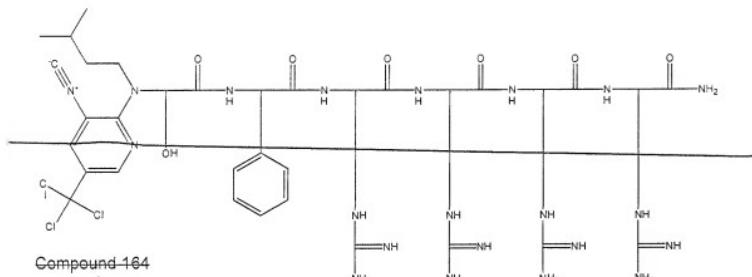
Compound 163

Applicant: David S. Lawrence

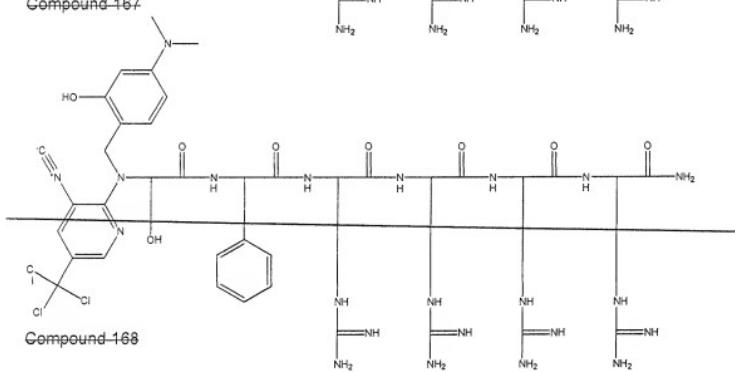
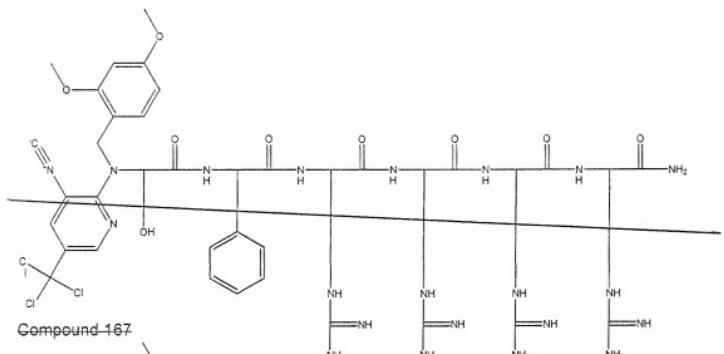
Serial No.: 10/755,086

Filed: January 9, 2004

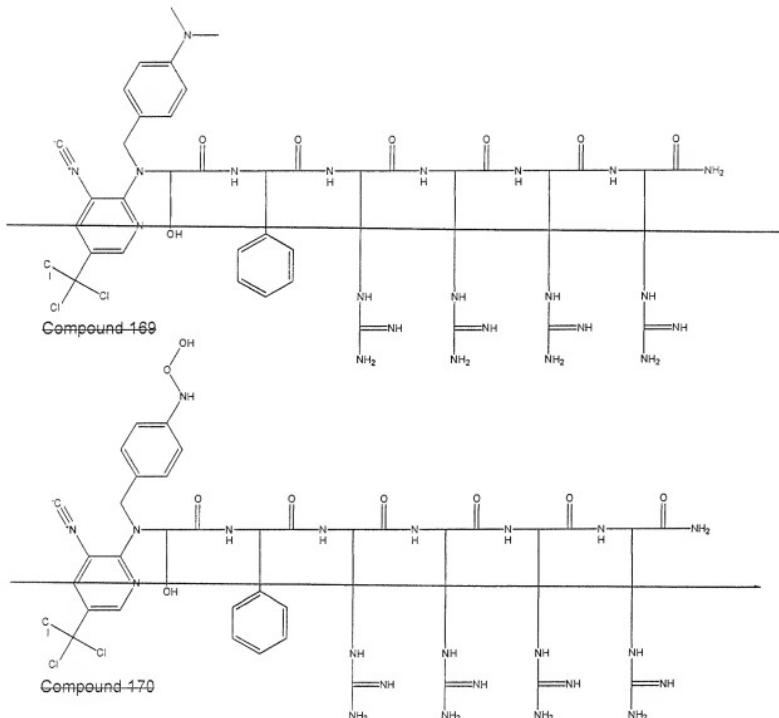
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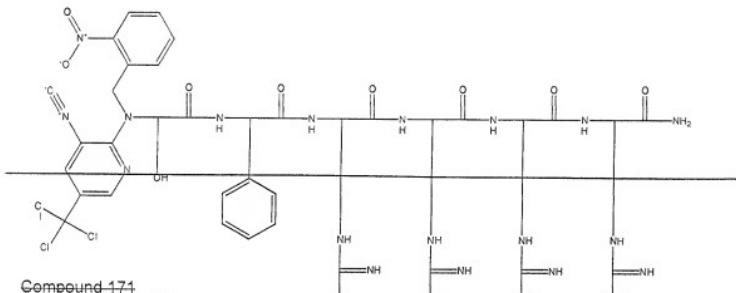
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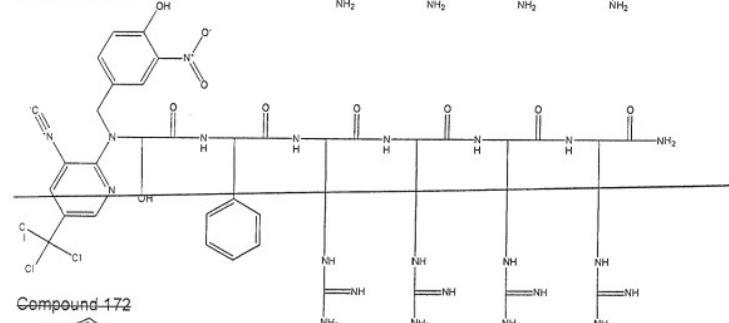
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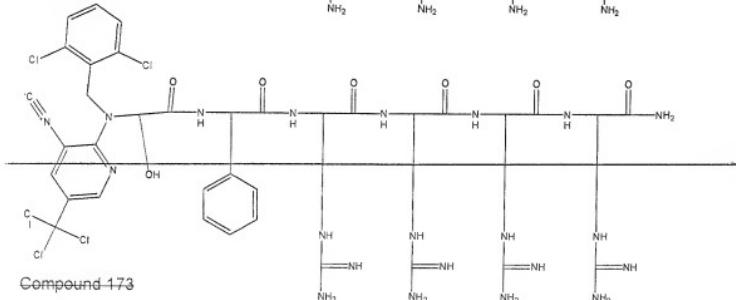
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Compound 171

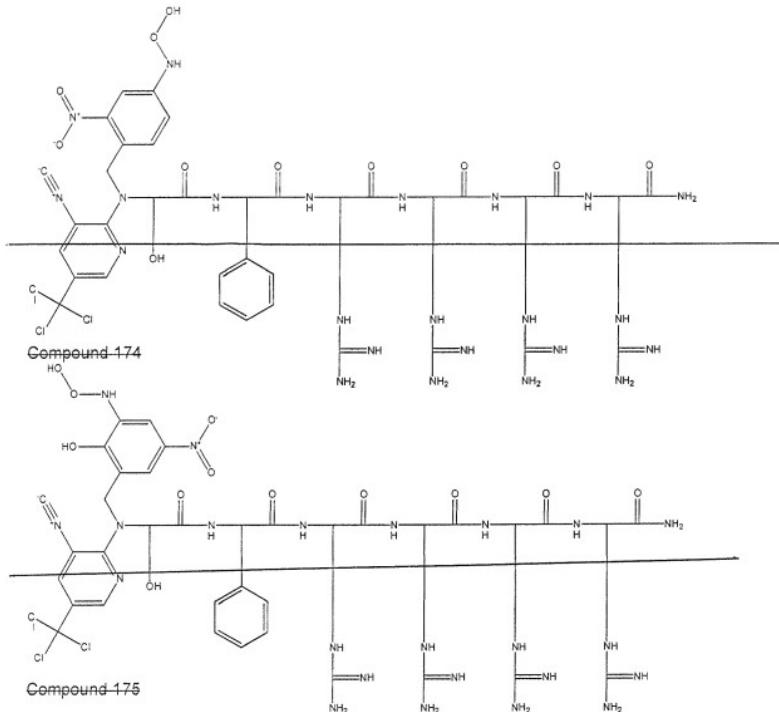


Compound 172



Compound 173

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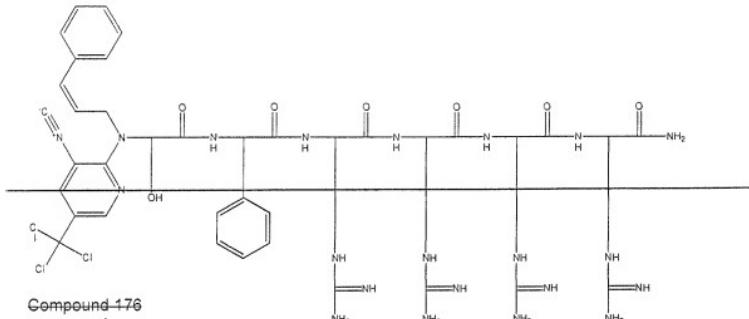


Applicant: David S. Lawrence

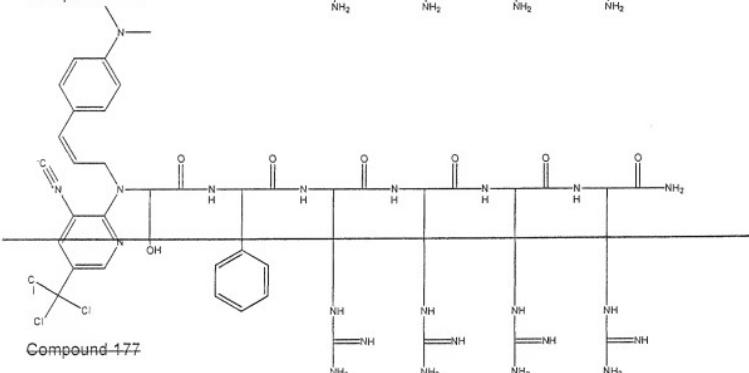
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Compound 176



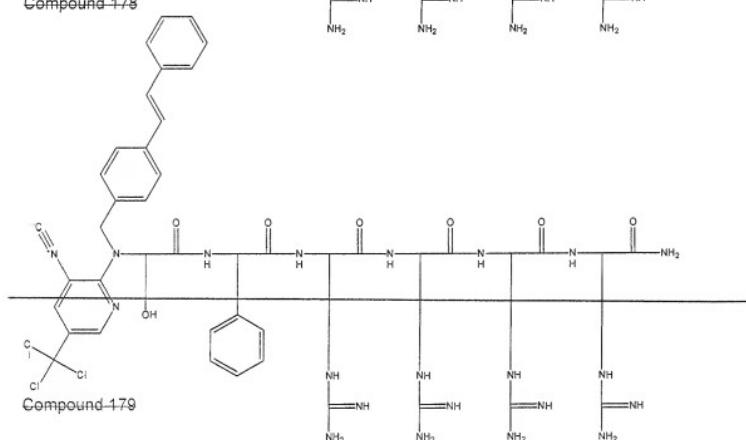
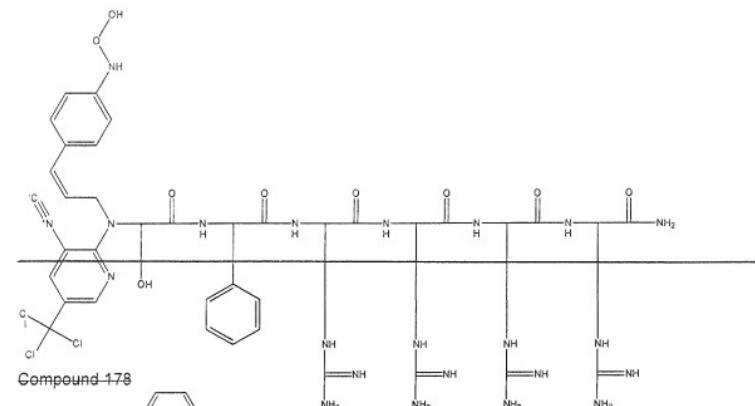
Compound 177

Applicant: David S. Lawrence

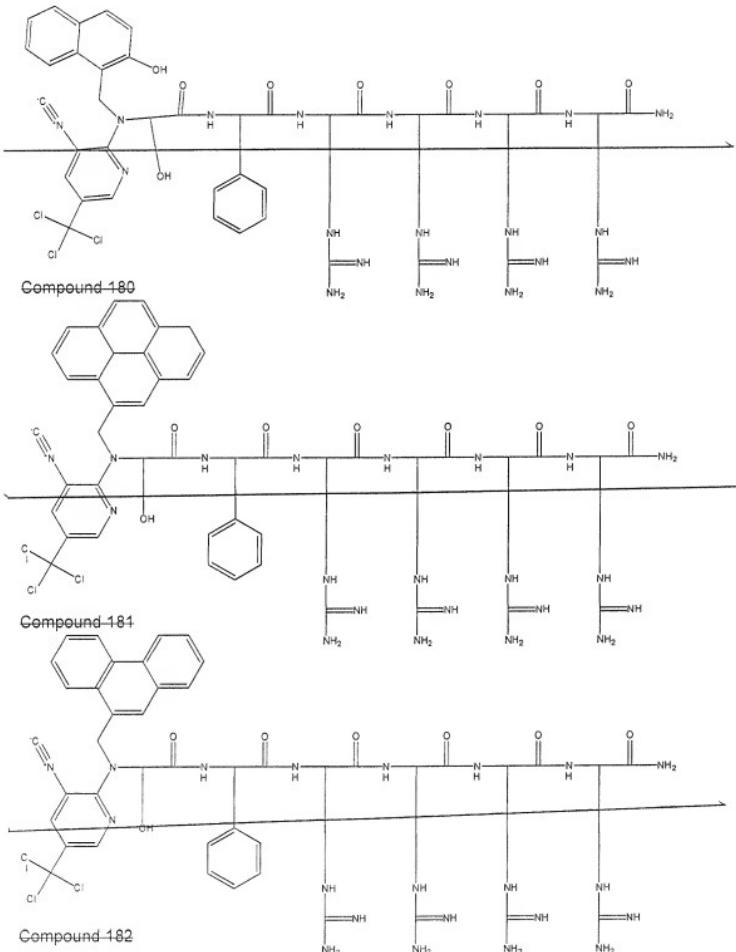
Serial No.: 10/755,086

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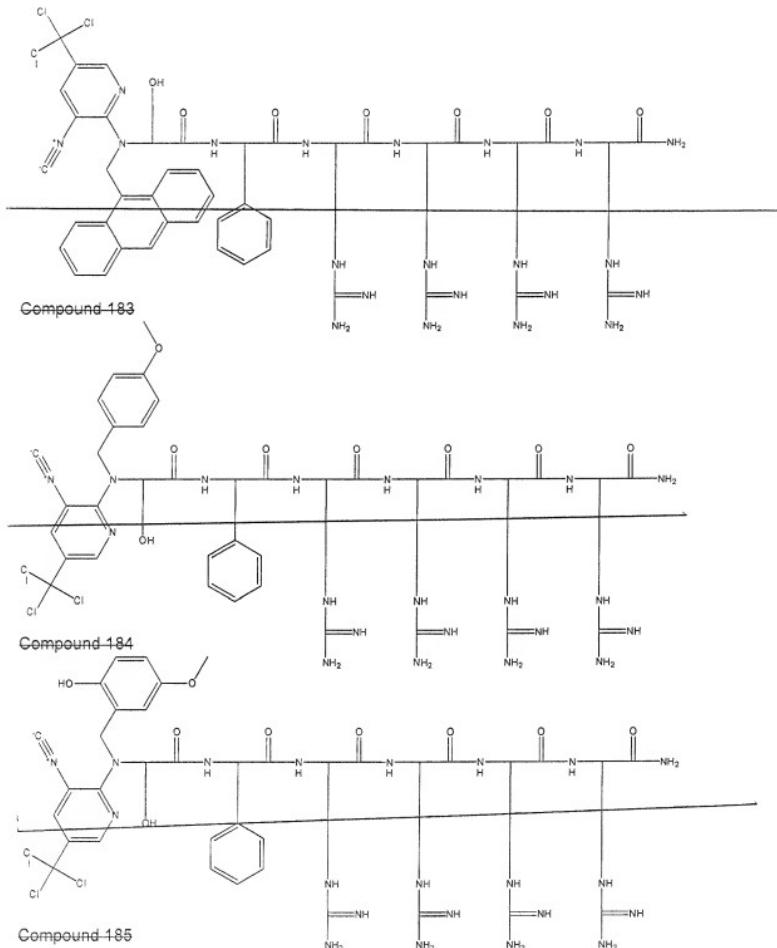
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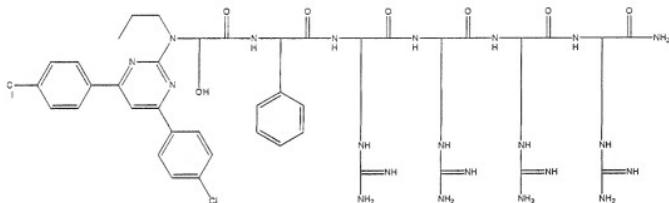


Applicant: David S. Lawrence

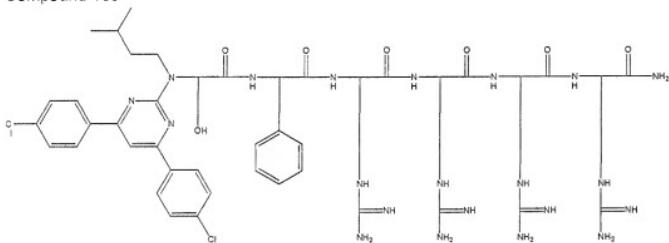
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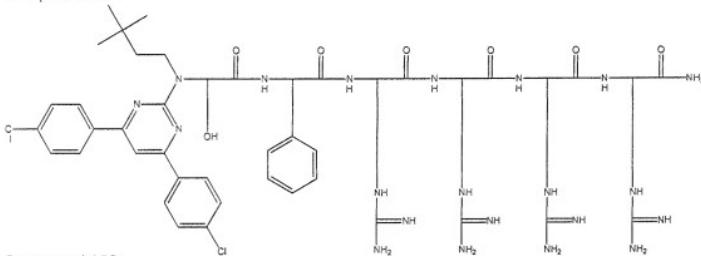
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Compound 186



Compound 187



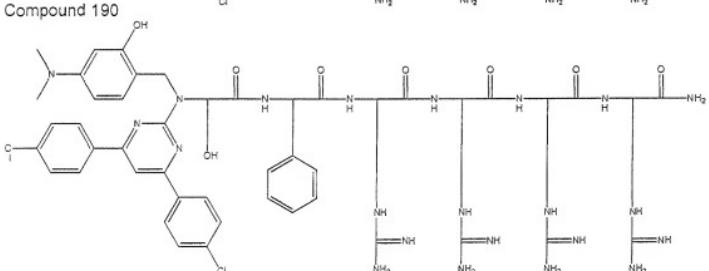
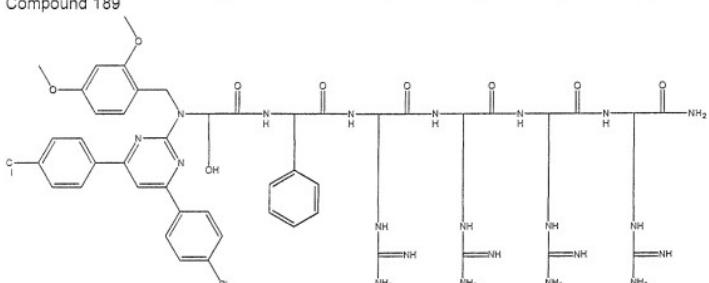
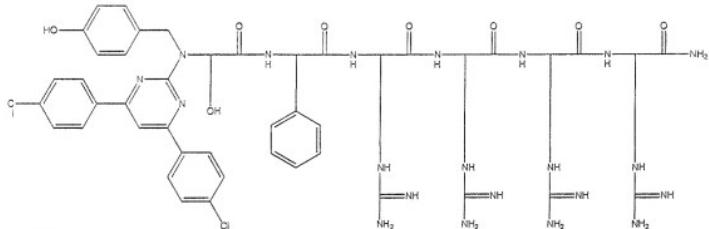
Compound 188

Applicant: David S. Lawrence

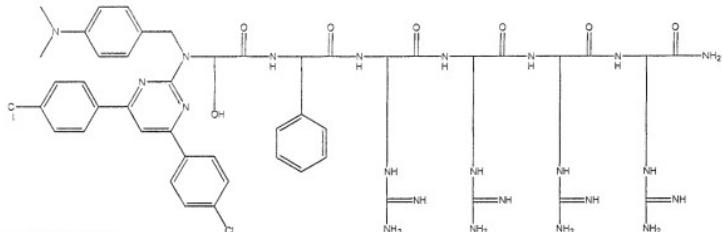
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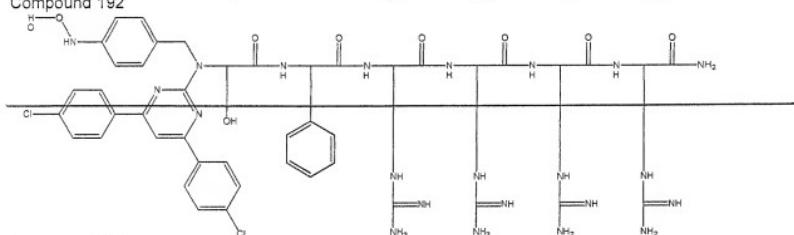
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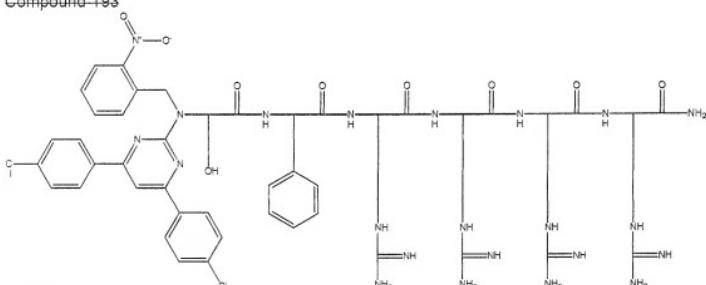
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Compound 192



Compound 193



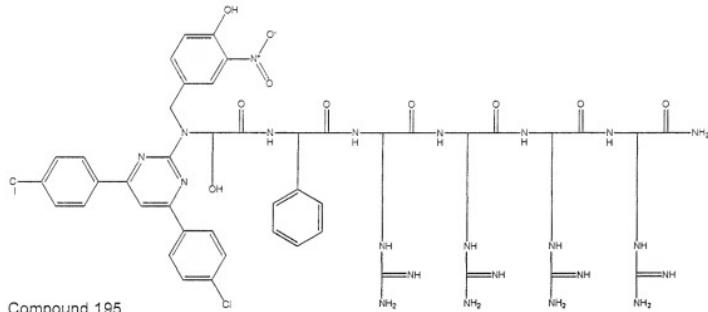
Compound 194

Applicant: David S. Lawrence

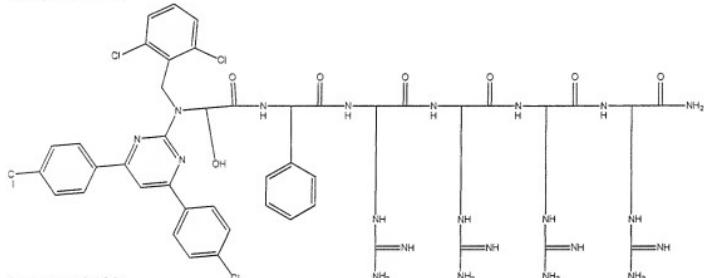
Serial No.: 10/755,086

Filed: January 9, 2004

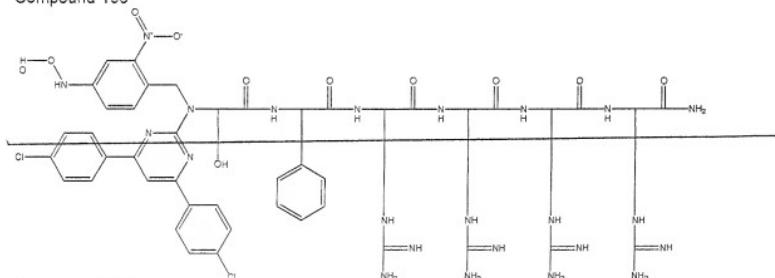
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Compound 195

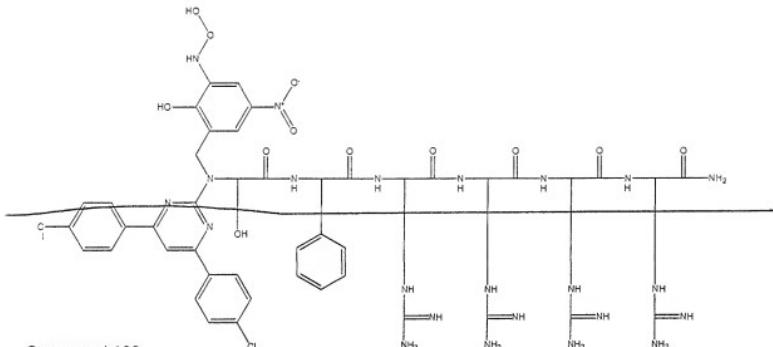


Compound 196

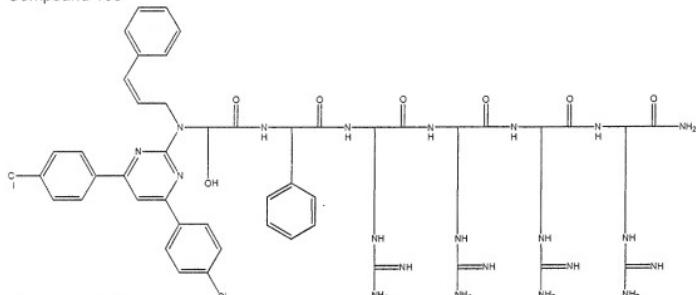


Compound 197

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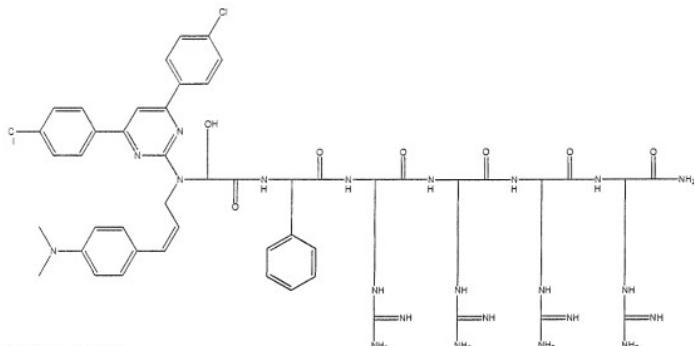


Compound 198

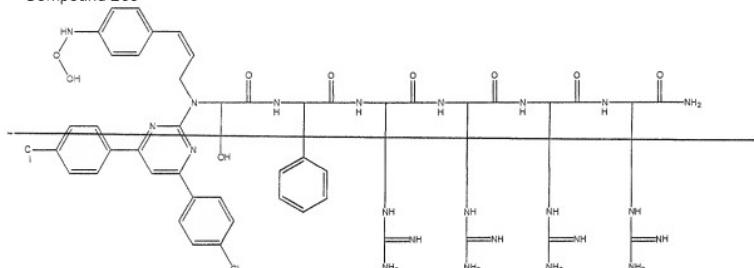


Compound 199

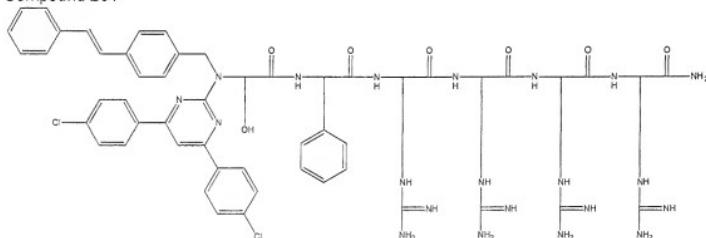
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Compound 200



Compound 201



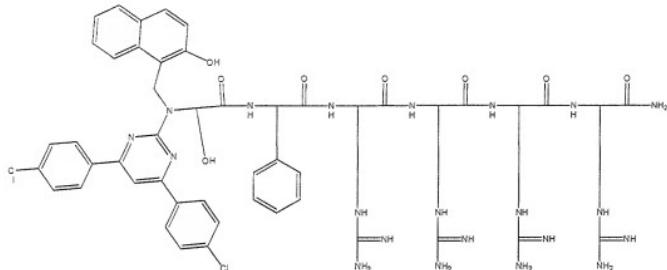
Compound 202

Applicant: David S. Lawrence

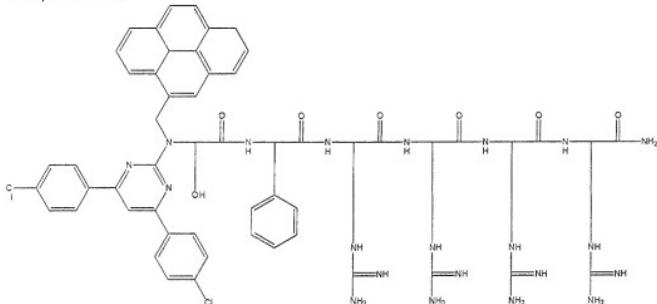
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Filed: January 9, 2004

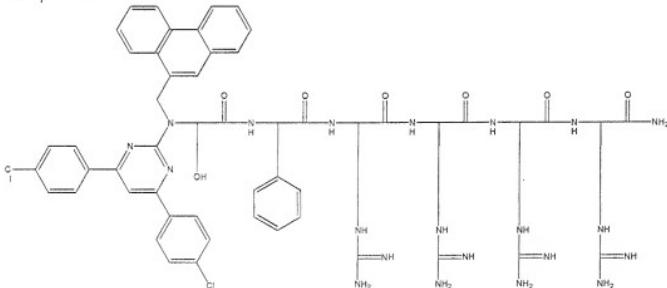
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Compound 203

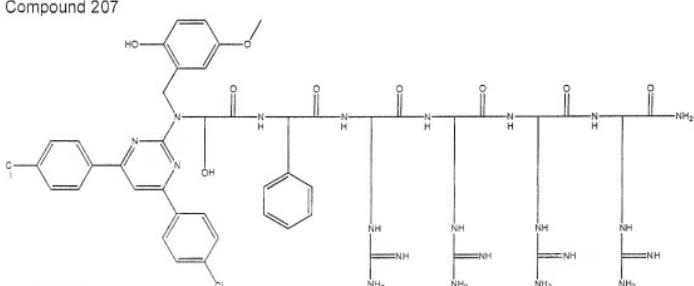
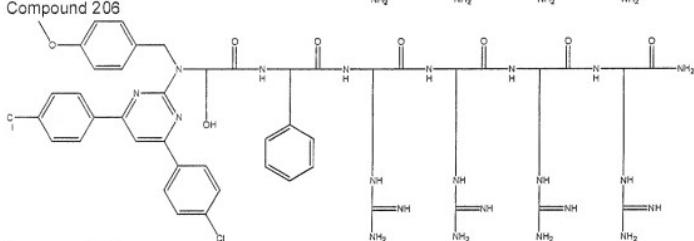
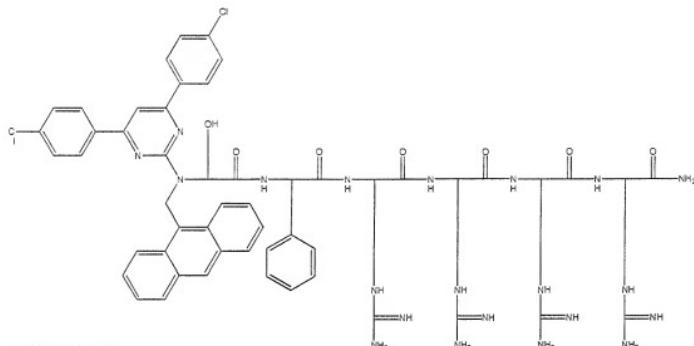


Compound 204

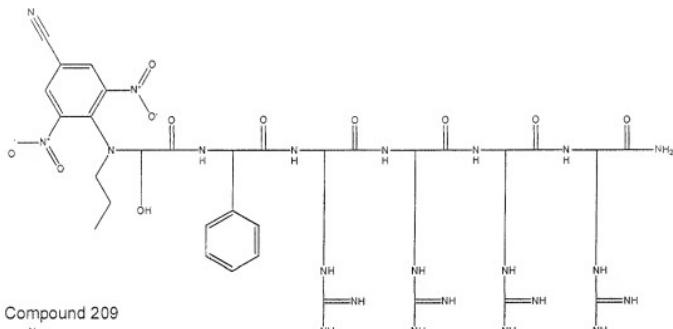


Compound 205

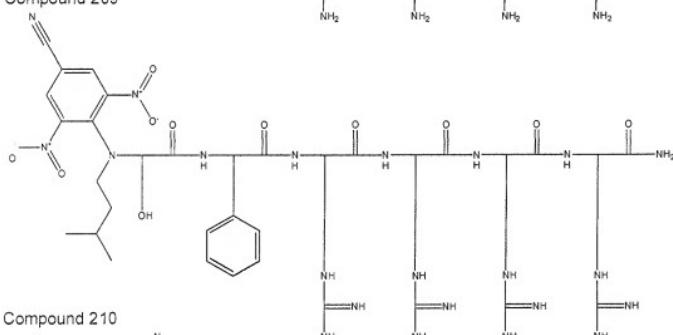
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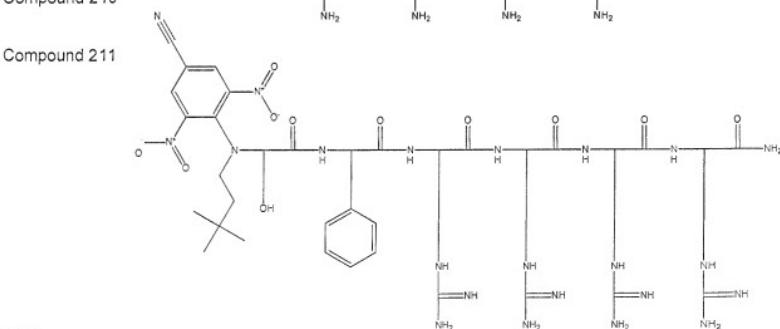
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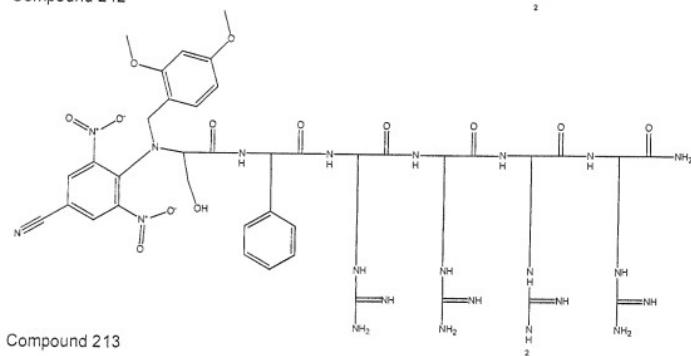
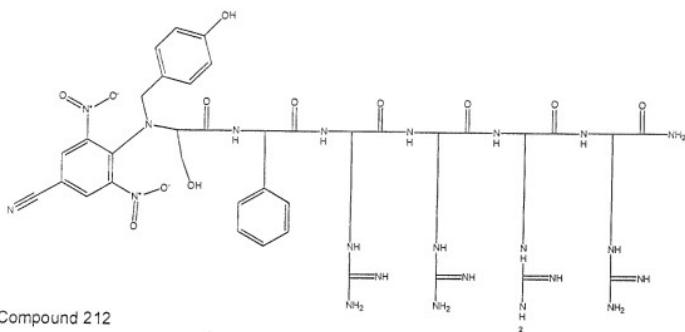
Compound 209



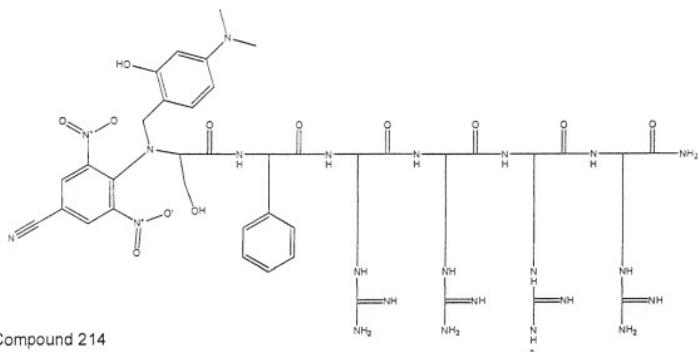
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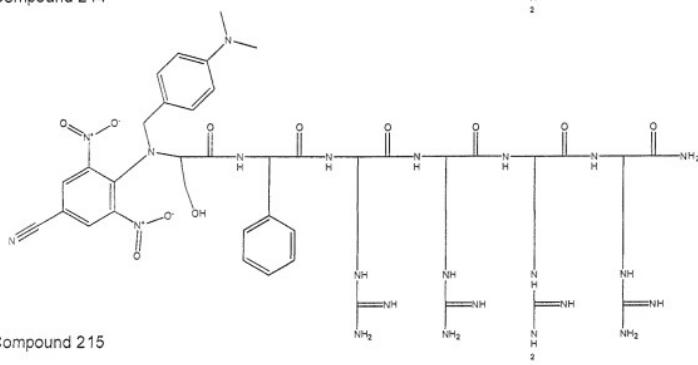
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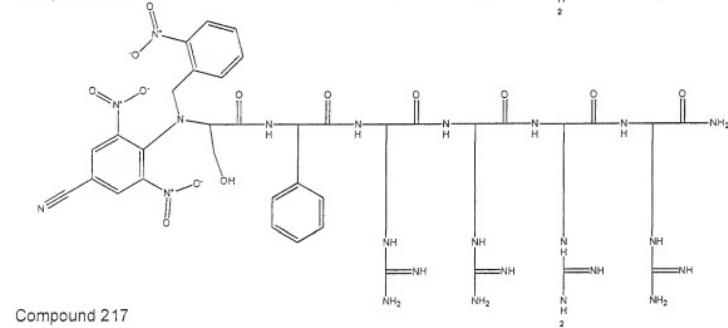
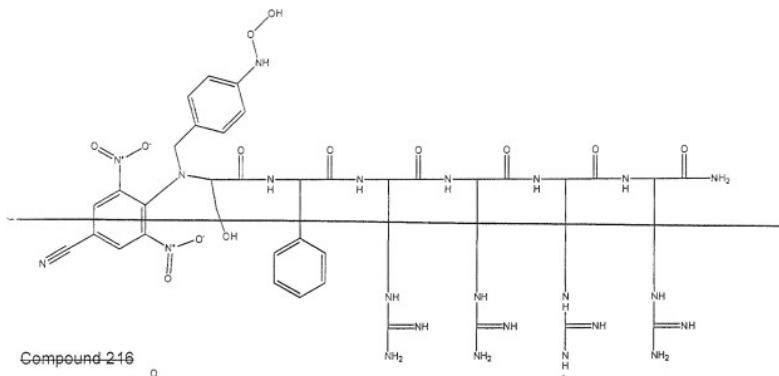


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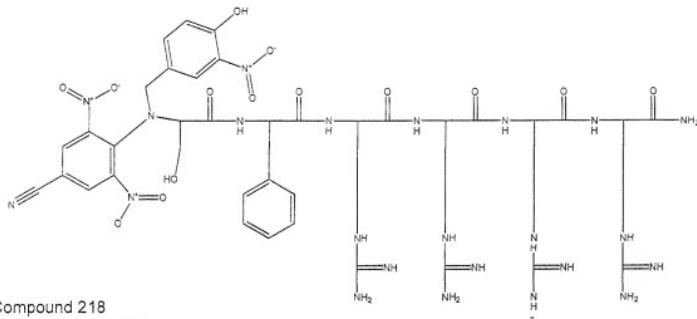


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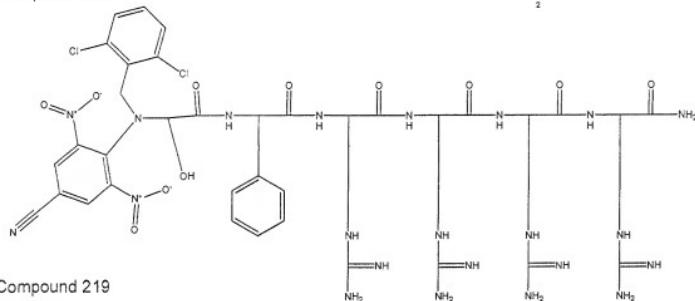
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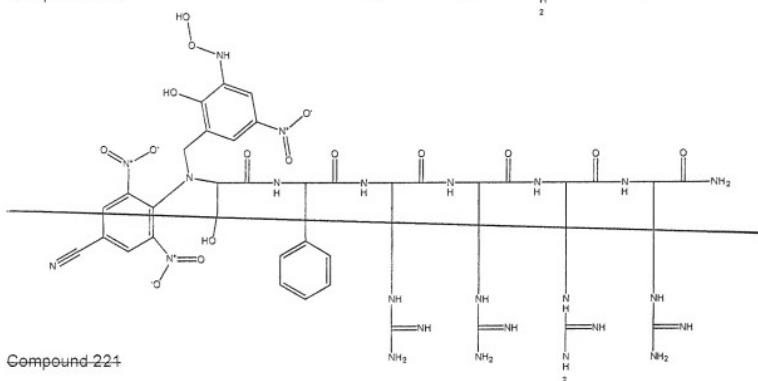
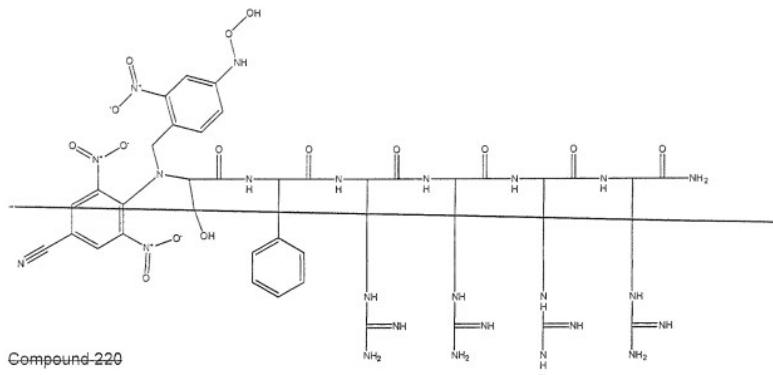


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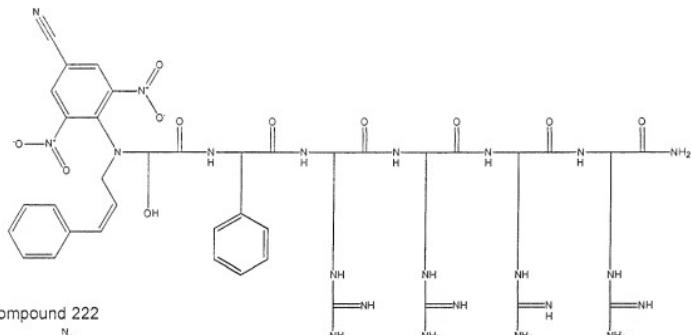


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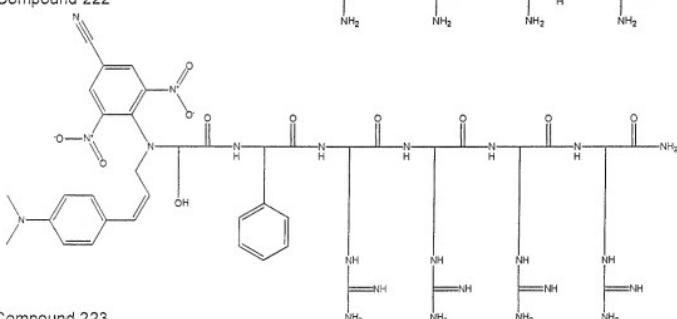
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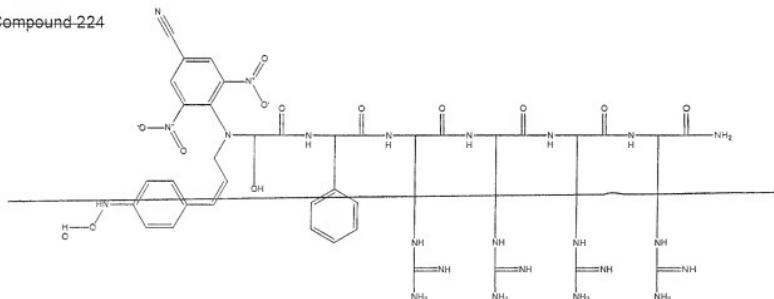


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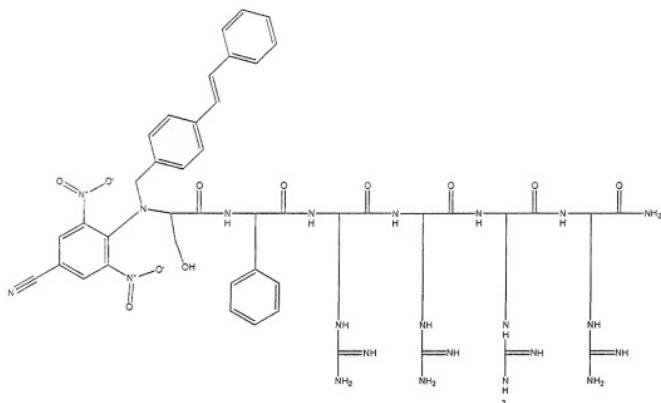


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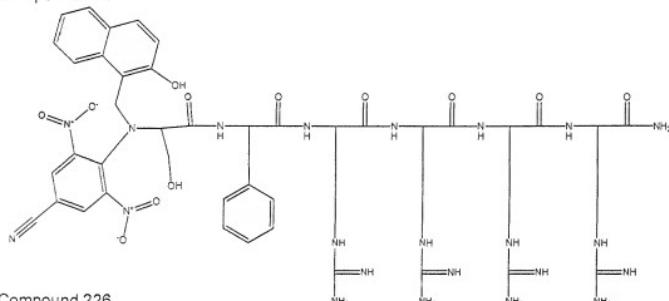
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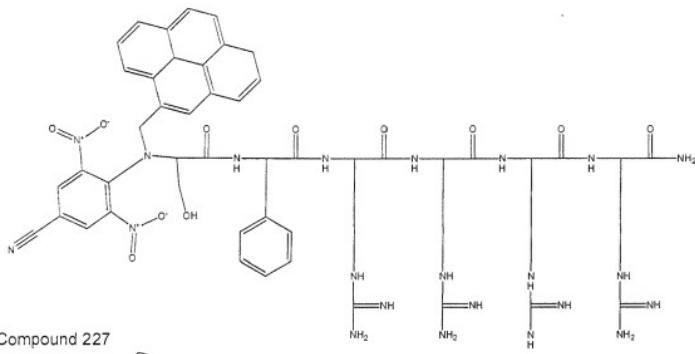


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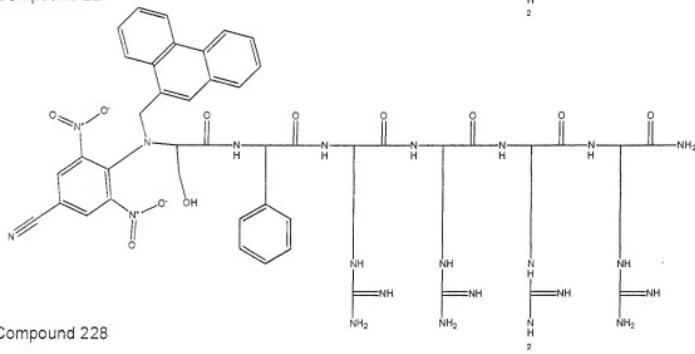


Compound 226

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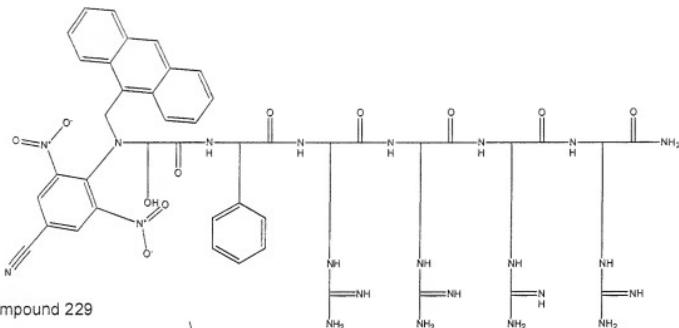


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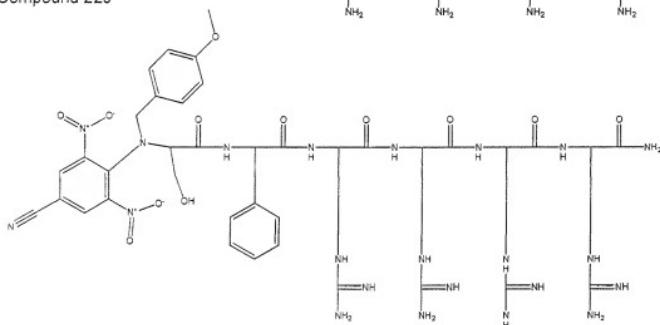


Compound 228

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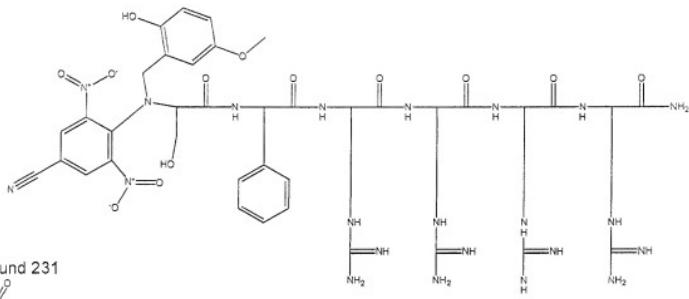


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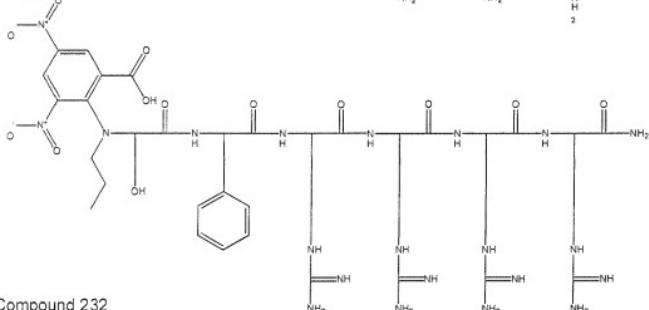


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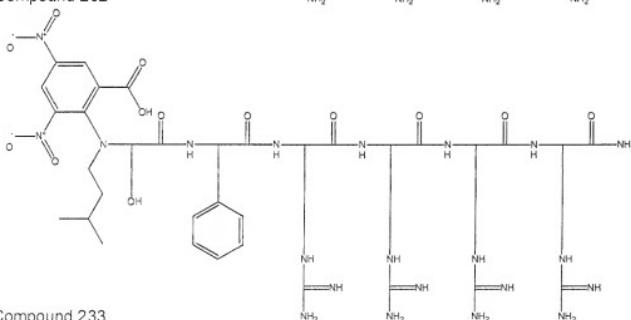
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Compound 231

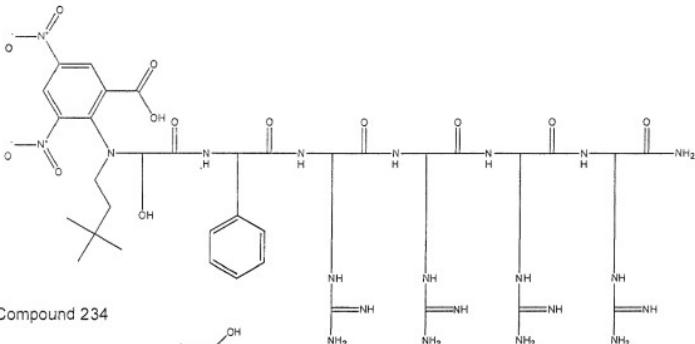


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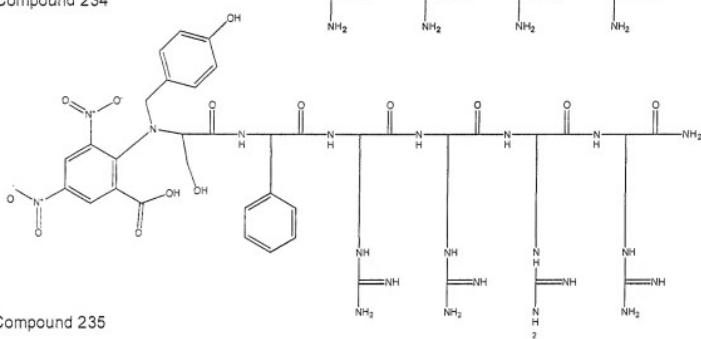


Compound 233

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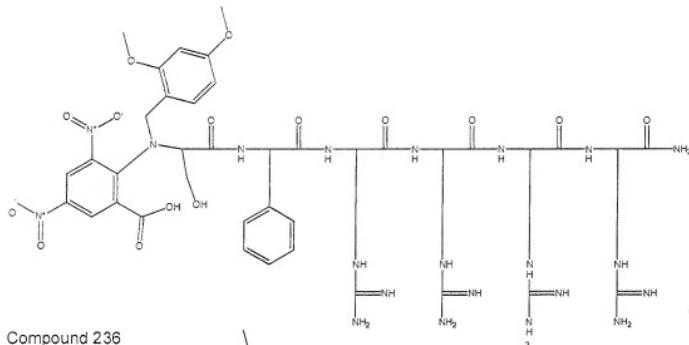


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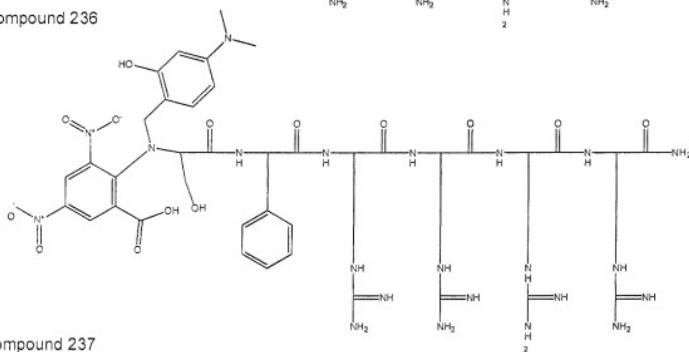


Compound 235

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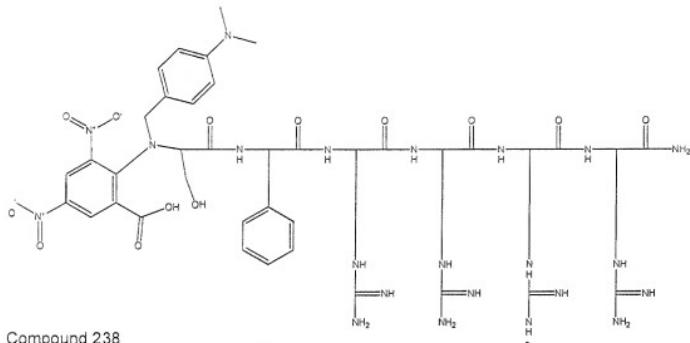


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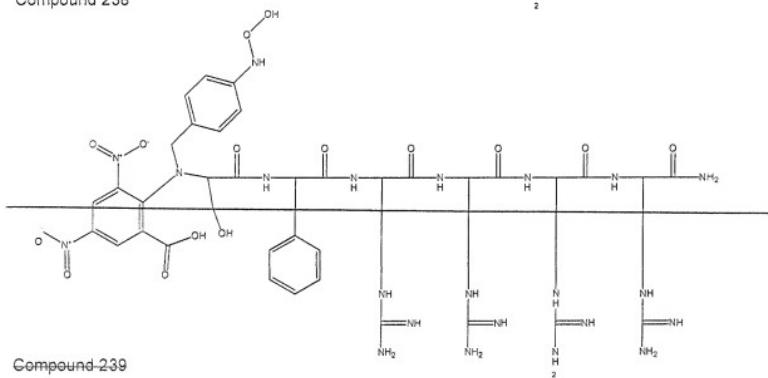


Compound 237

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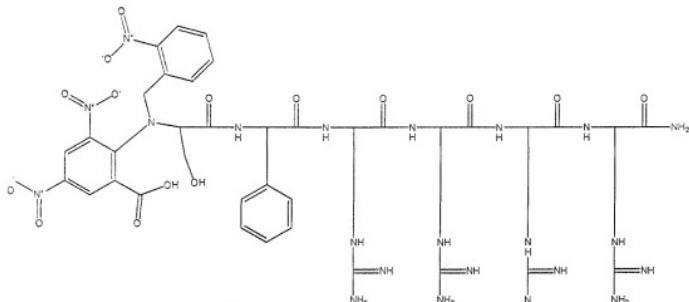


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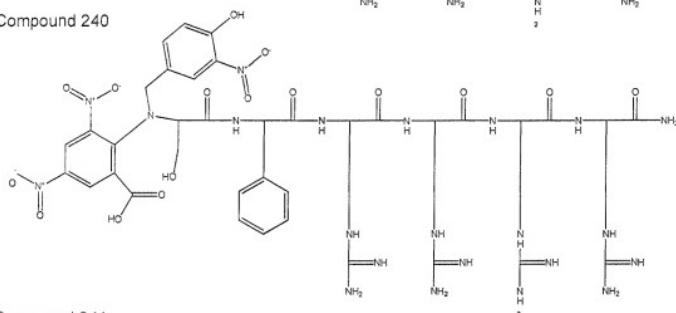


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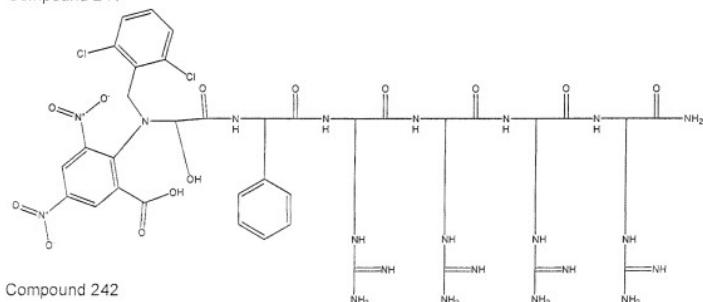
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Compound 240

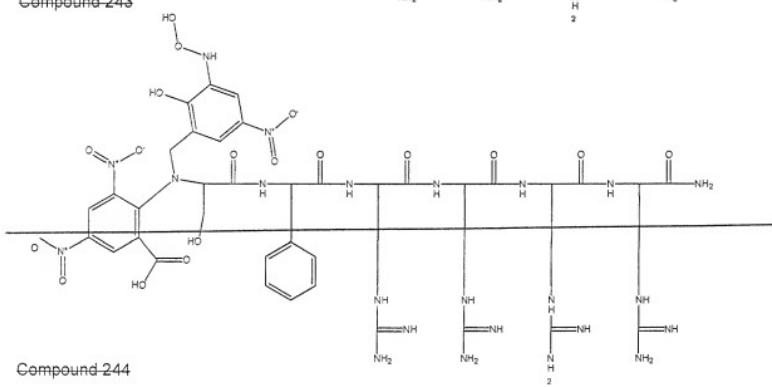
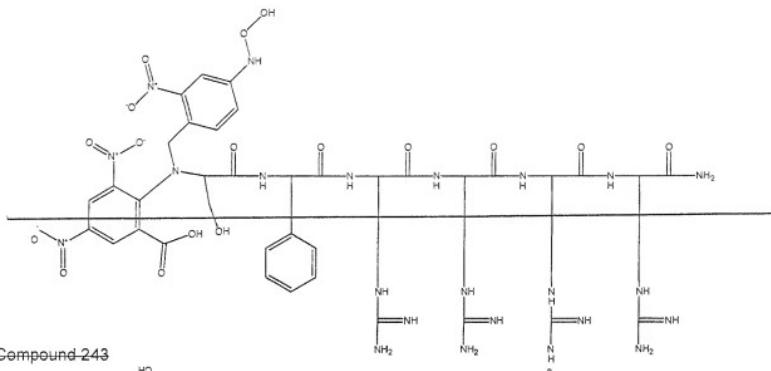


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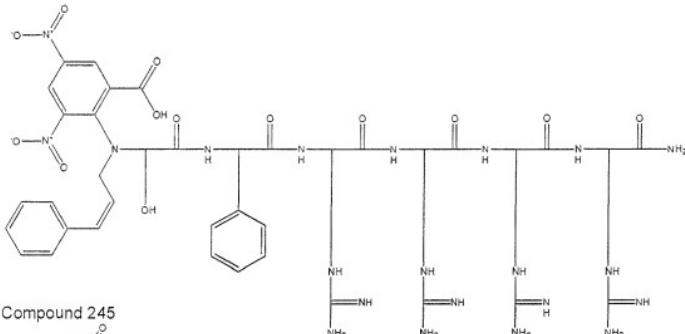


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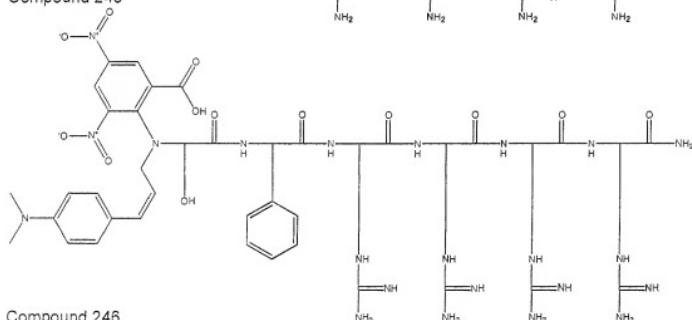
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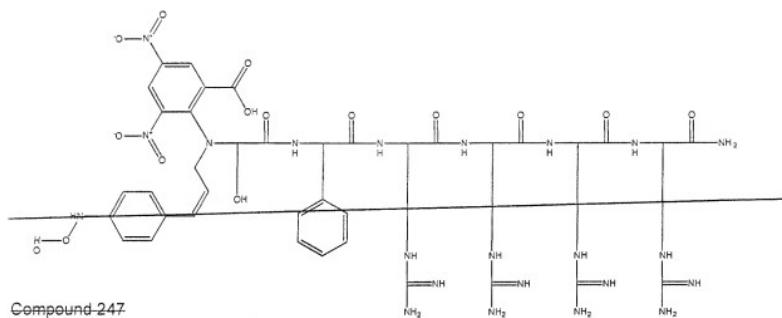


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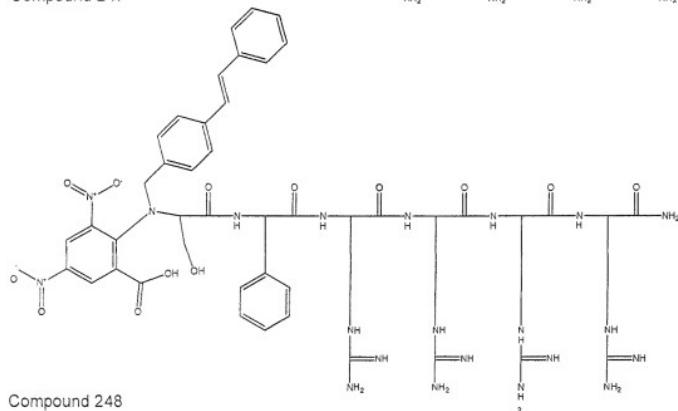


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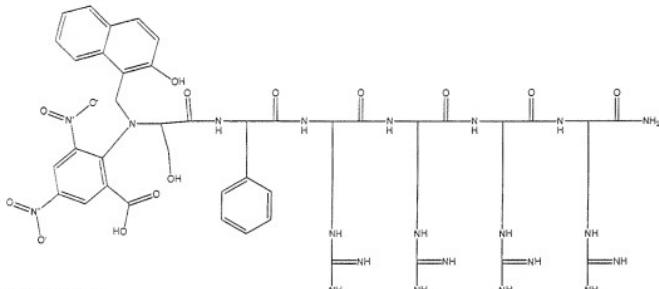


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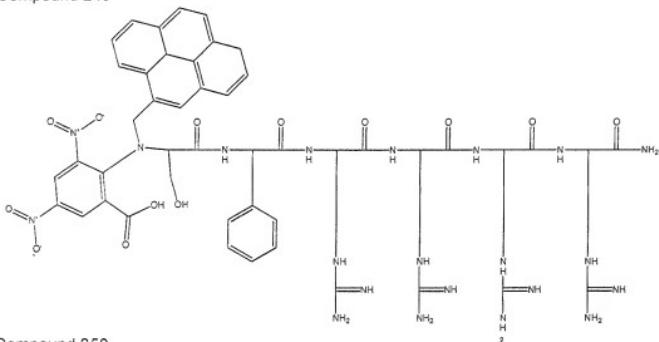


Compound 248

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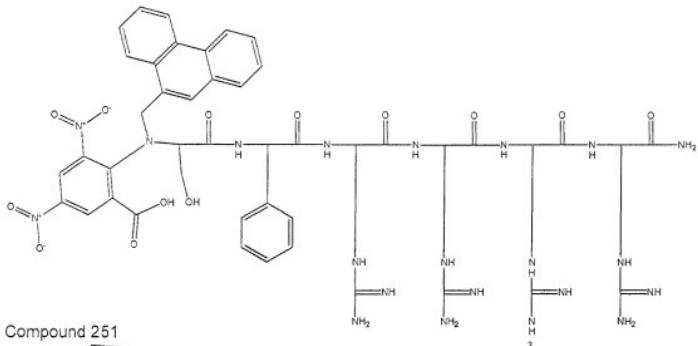


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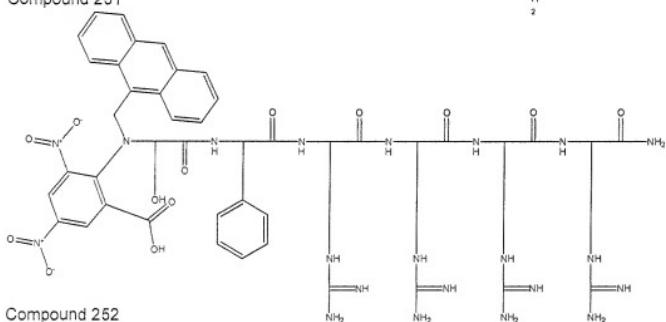


Compound 250

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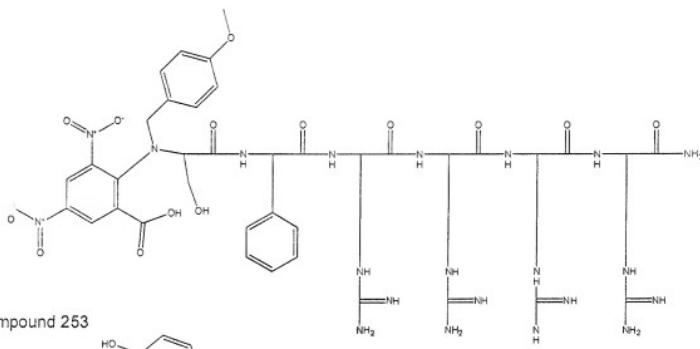


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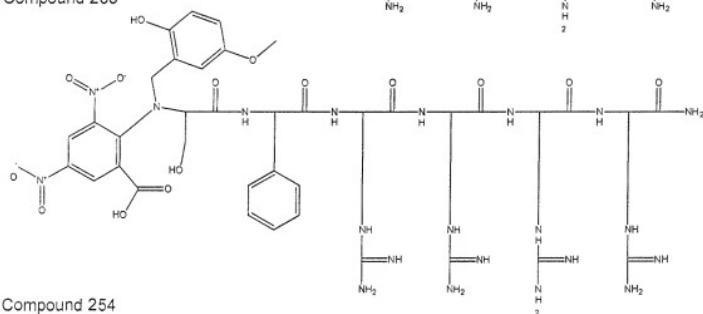


Compound 252

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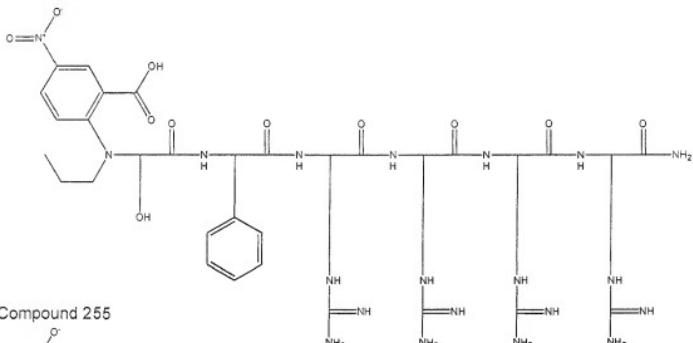


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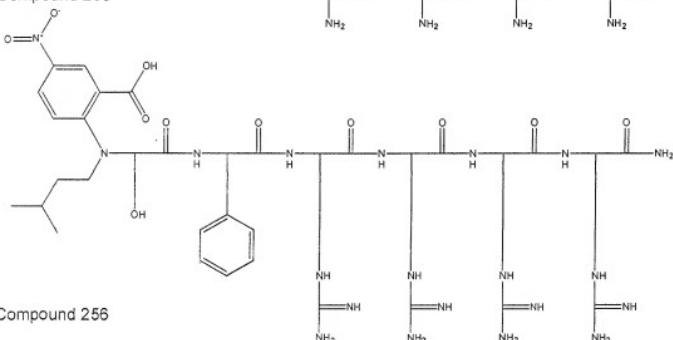


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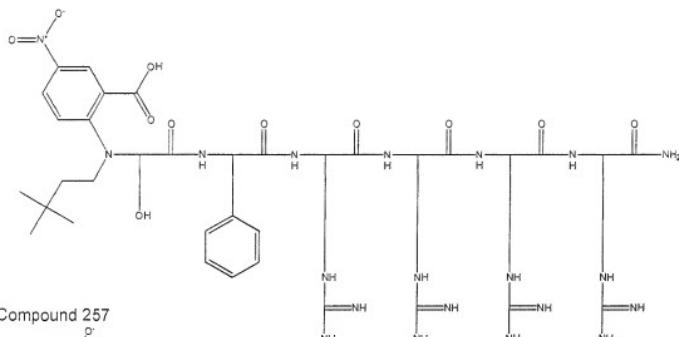


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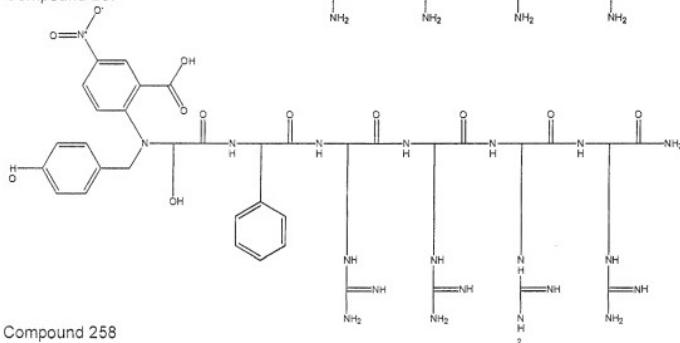


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Compound 257



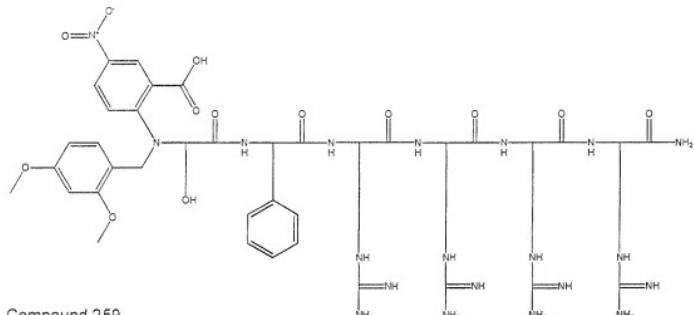
Compound 258

Applicant: David S. Lawrence

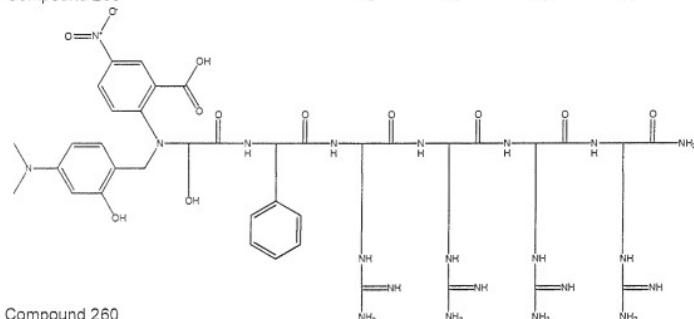
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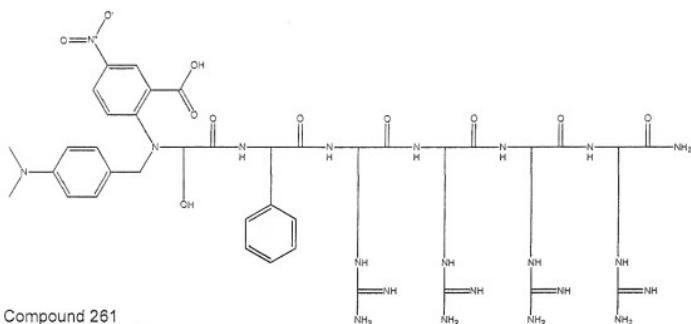


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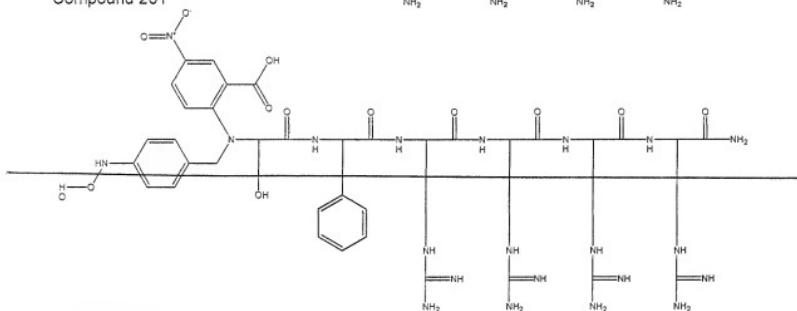


Compound 260

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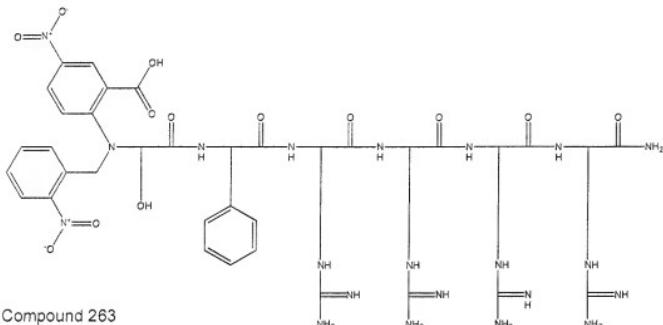


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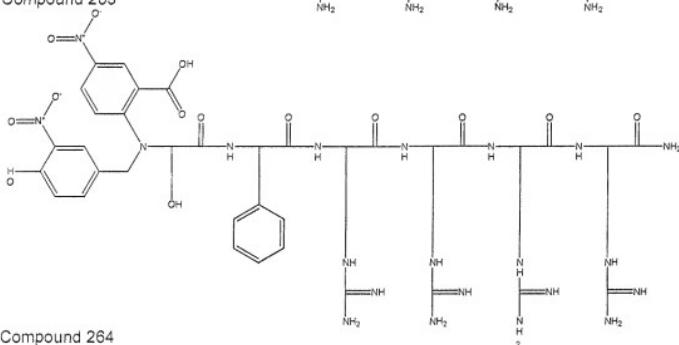


Compound 262

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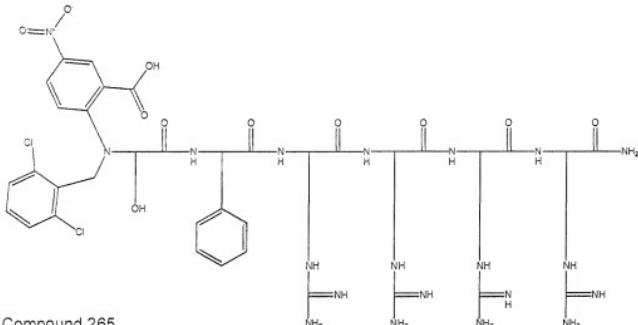


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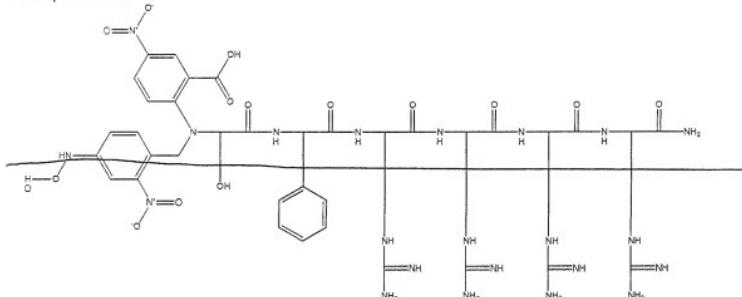


Compound 264

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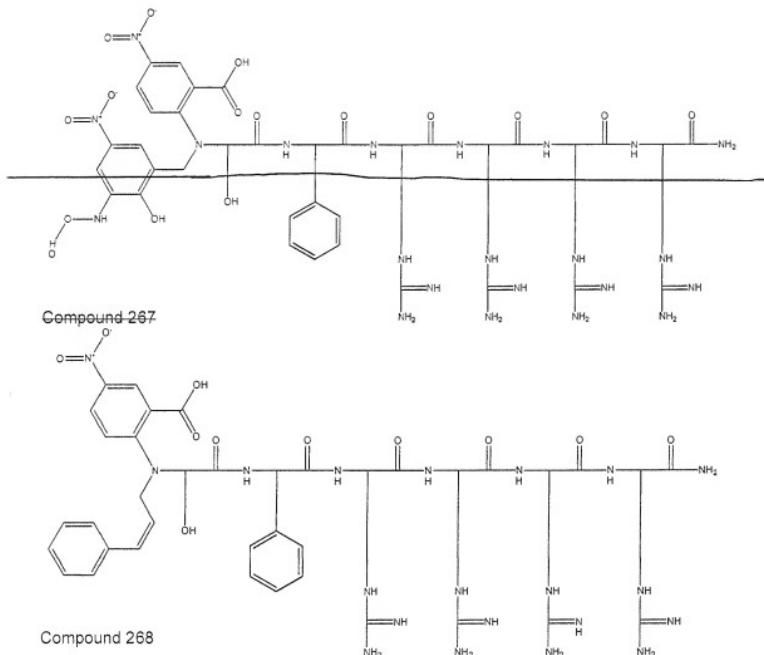


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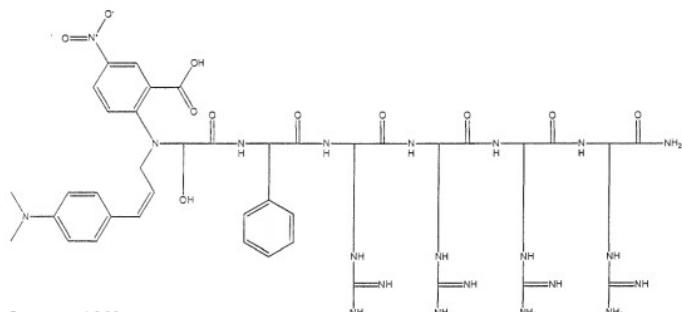


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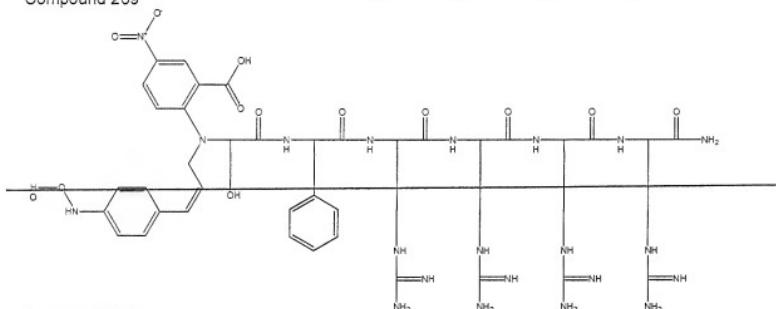
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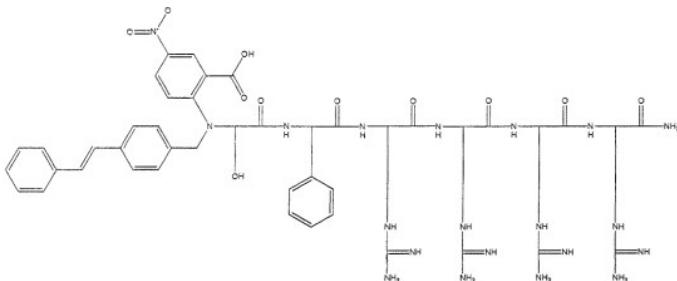


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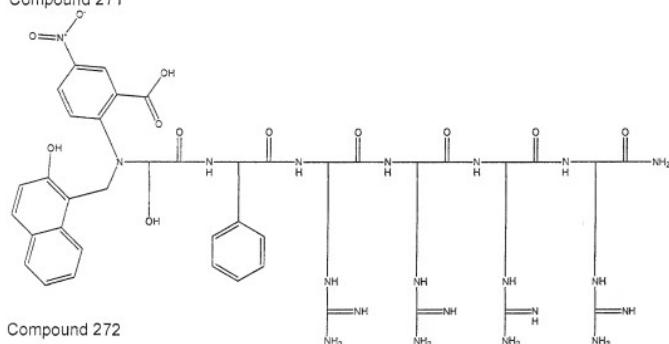


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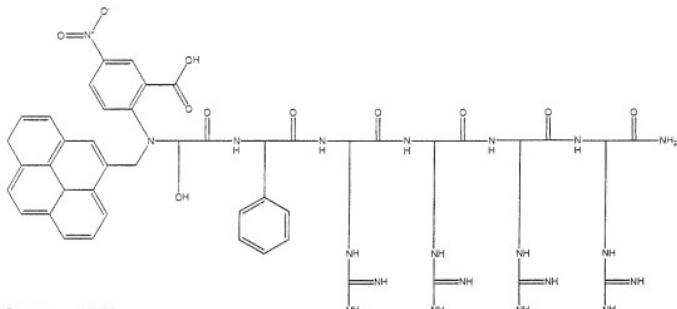


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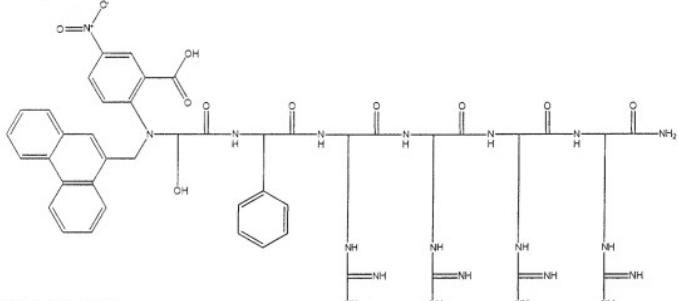


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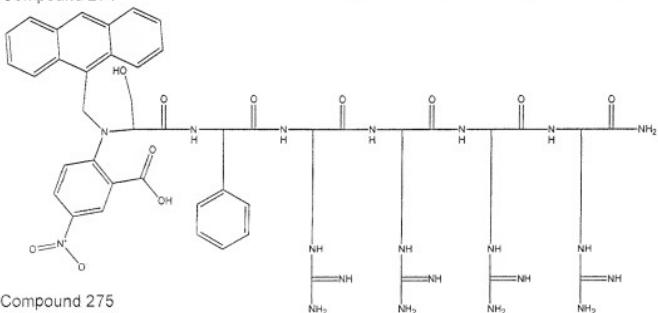
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Compound 273



Compound 274



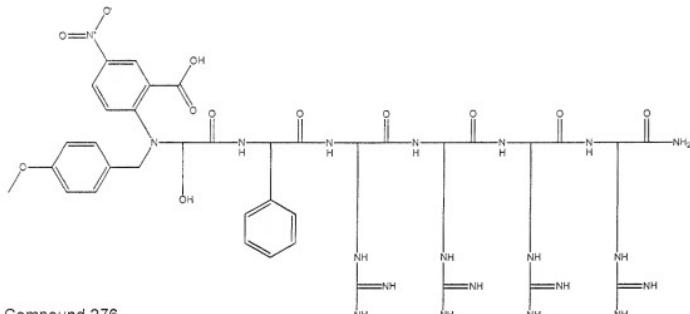
Compound 275

Applicant: David S. Lawrence

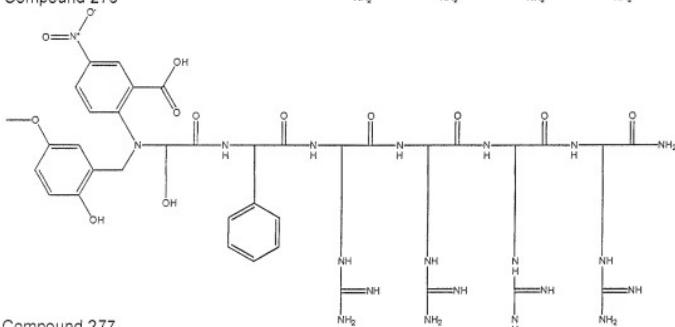
Serial No.: 10/755,086

Filed: January 9, 2004

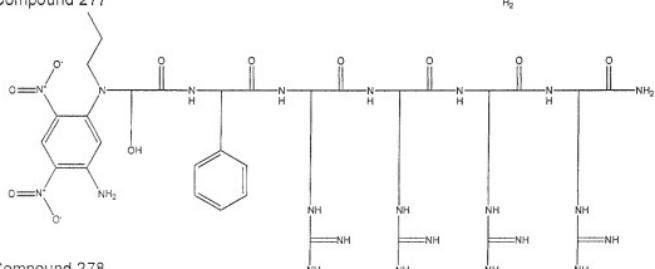
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Compound 276

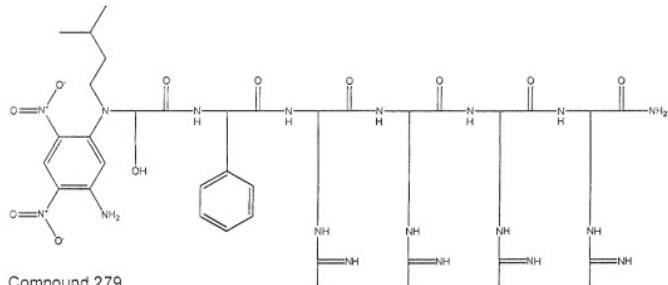


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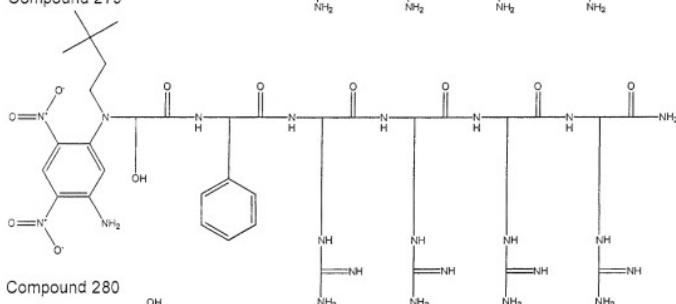


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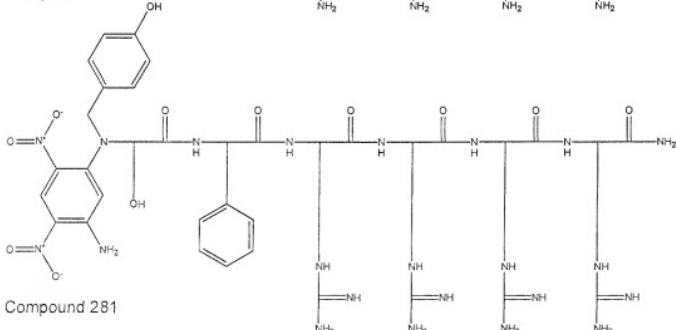
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Compound 279

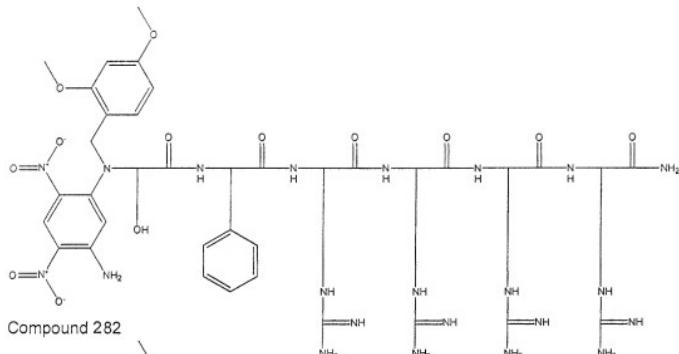


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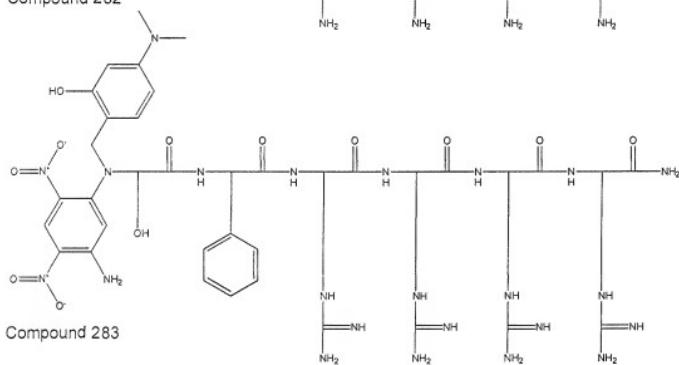


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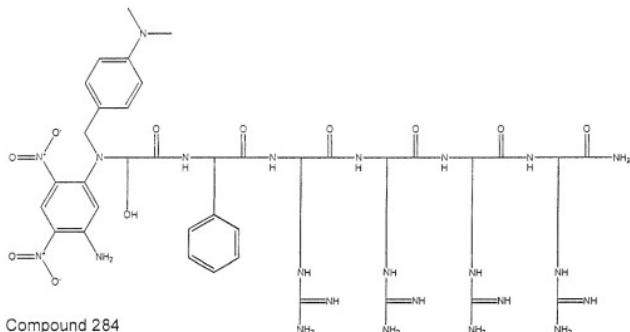


Compound 282

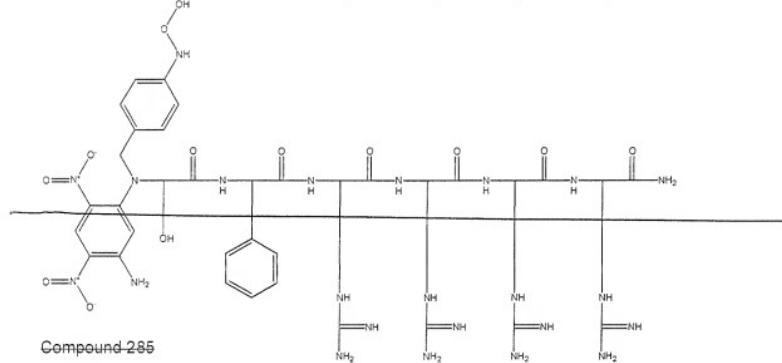


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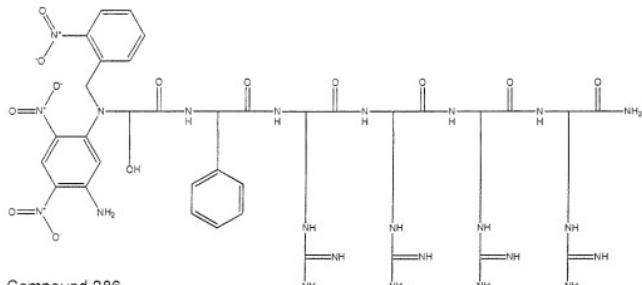


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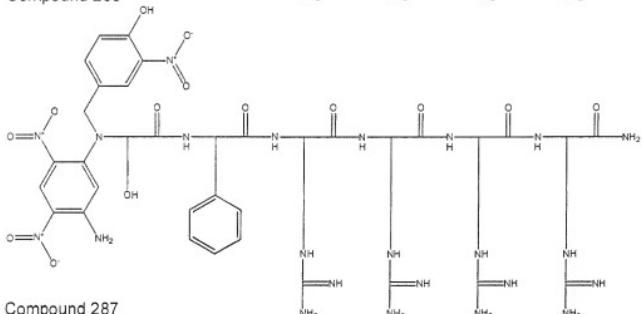


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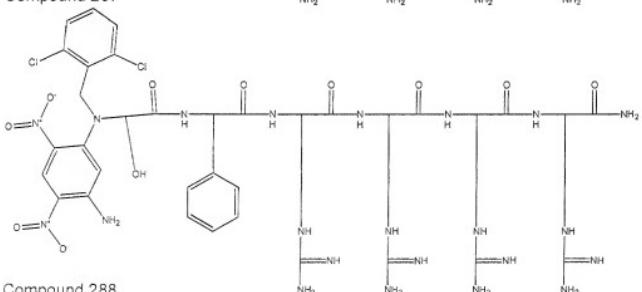
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Compound 286

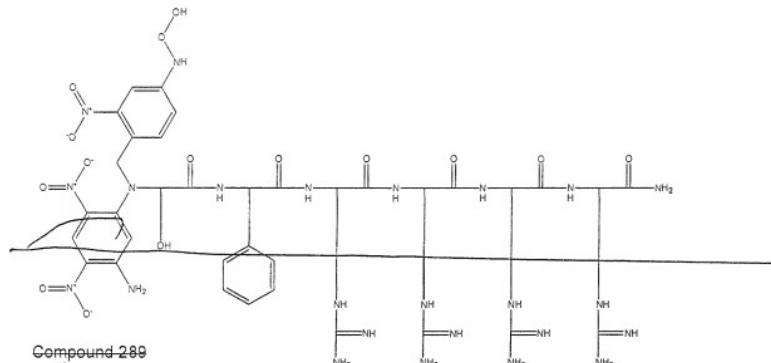


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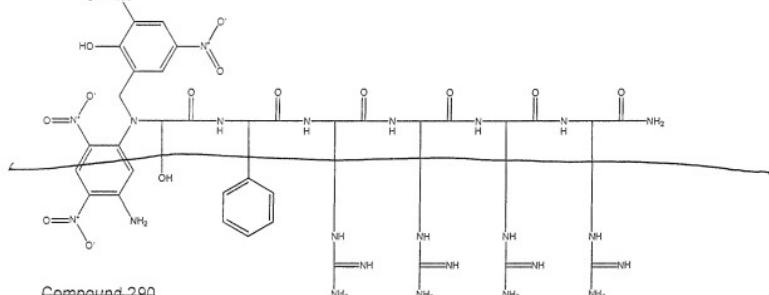


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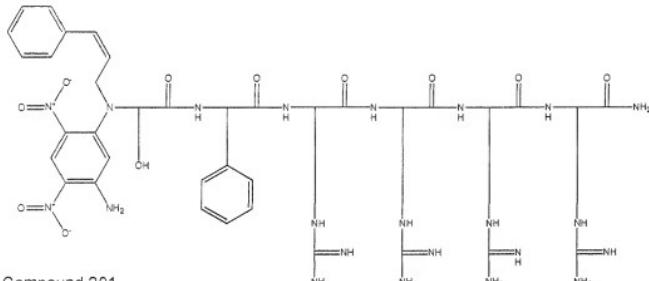


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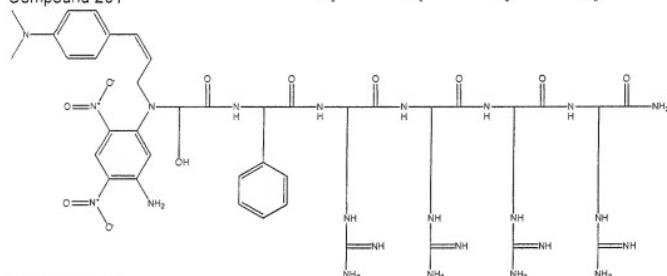


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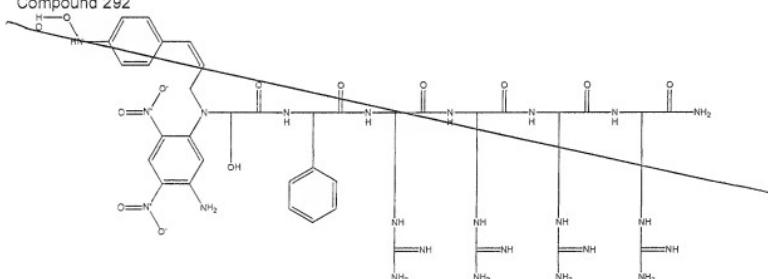
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Compound 291

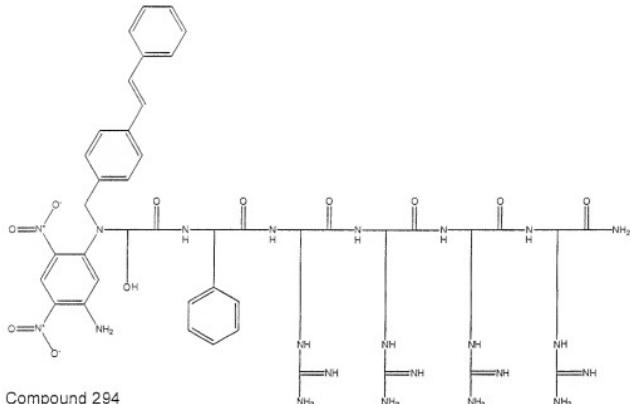


Compound 292

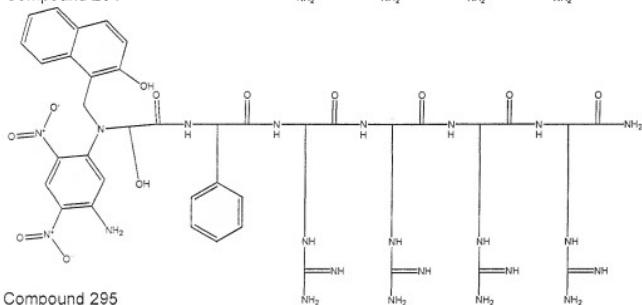


Compound 293

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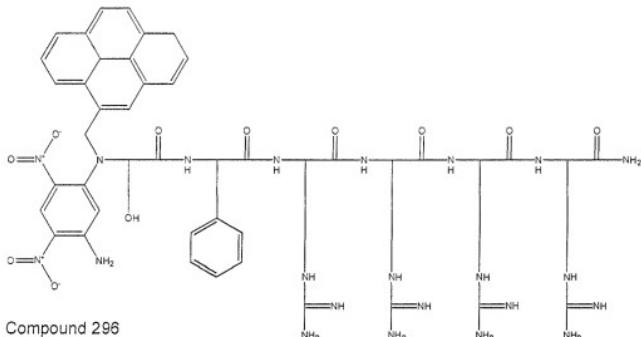


Compound 294

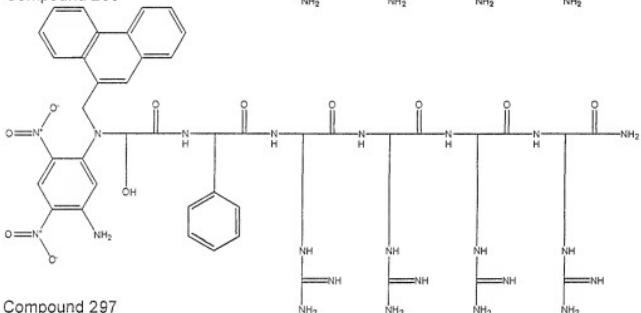


Compound 295

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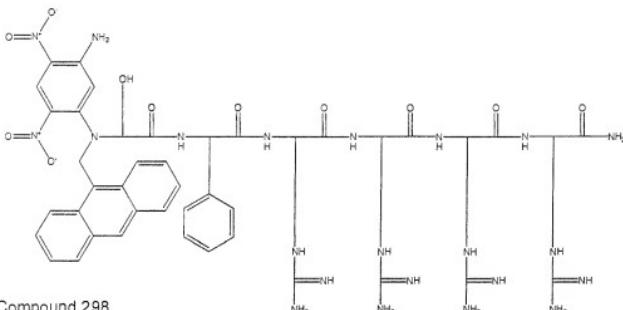


Compound 296

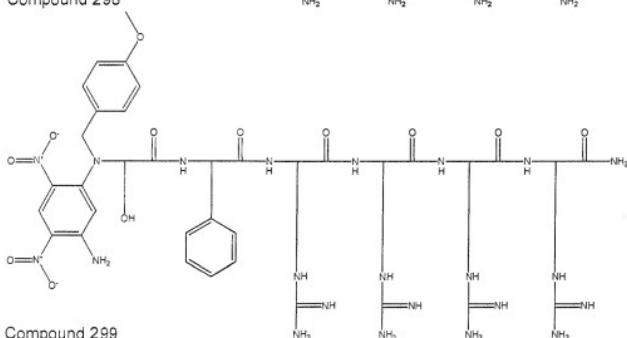


Compound 297

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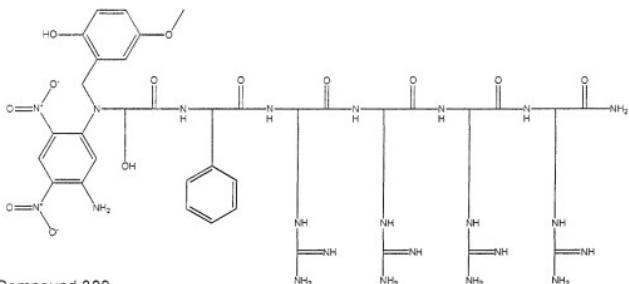


Compound 298

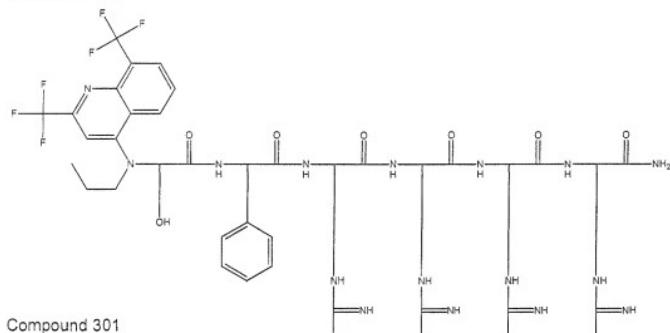


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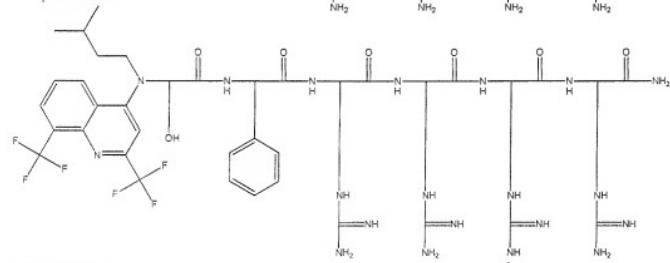
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Compound 300

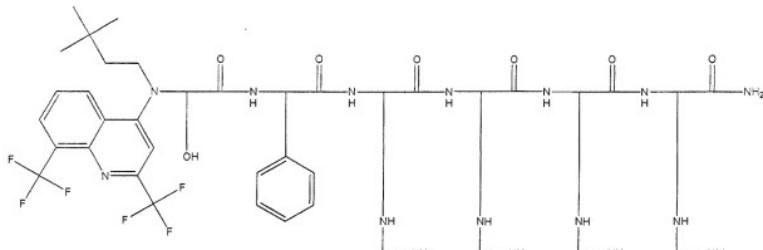


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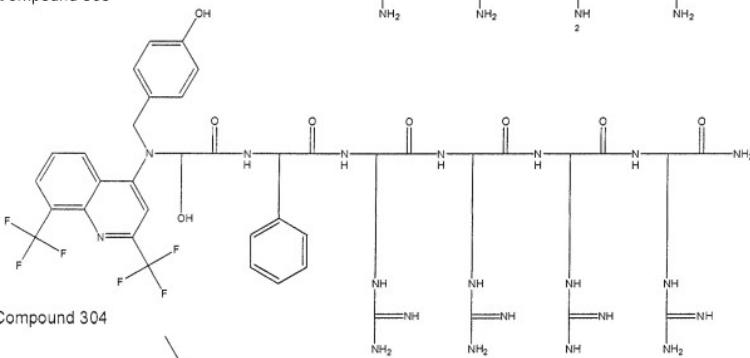


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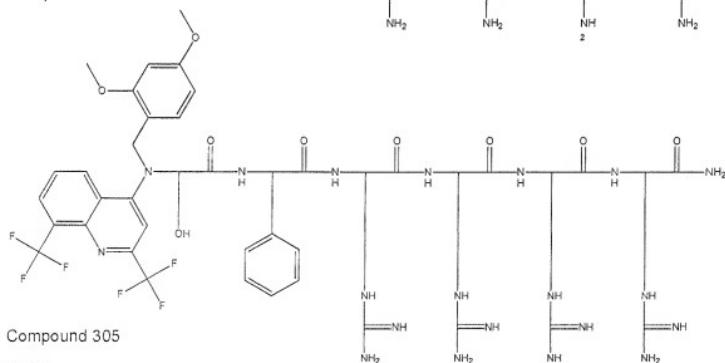
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Compound 303

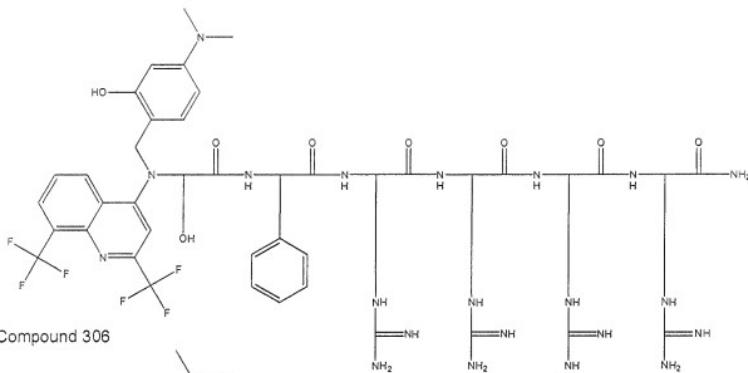


Compound 304

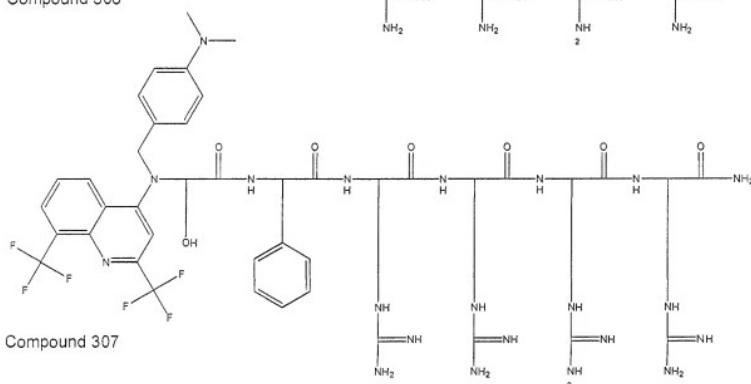


Compound 305

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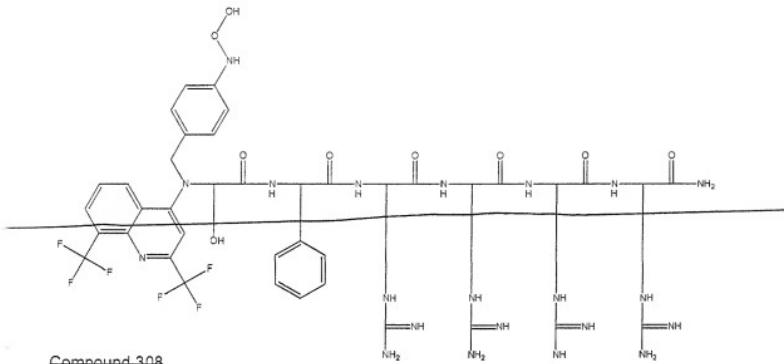


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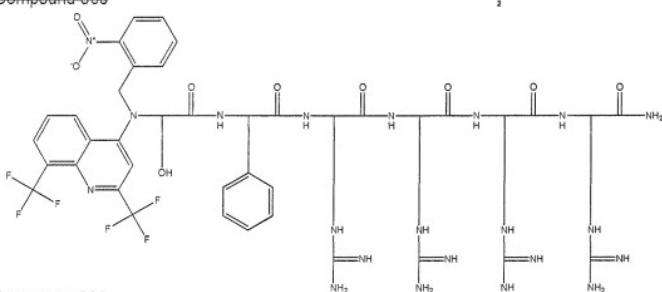


Compound 307

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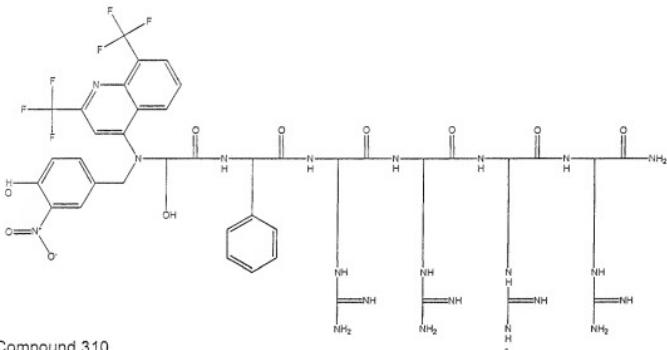


Compound 398

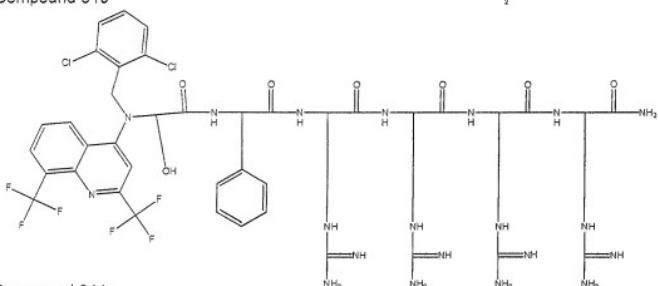


Compound 309

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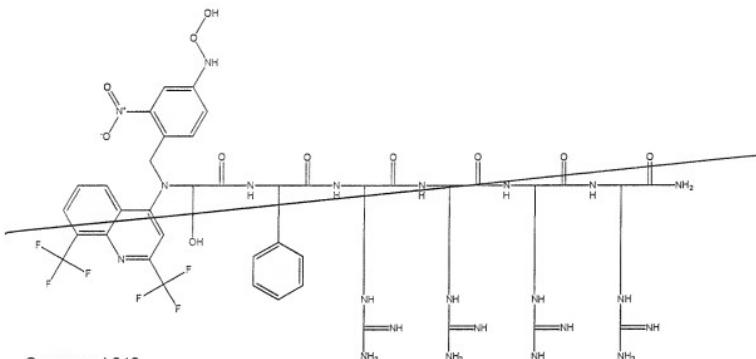


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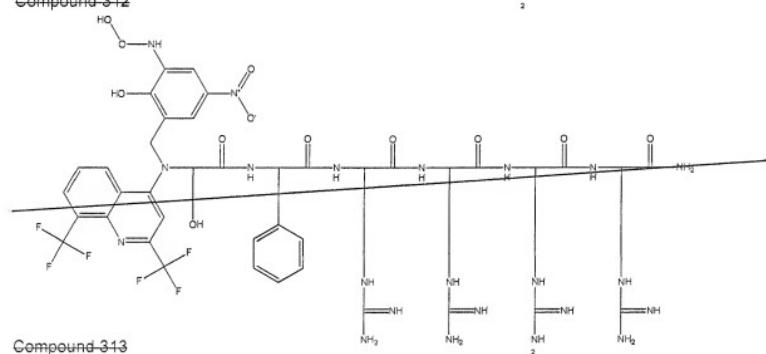


Compound 311

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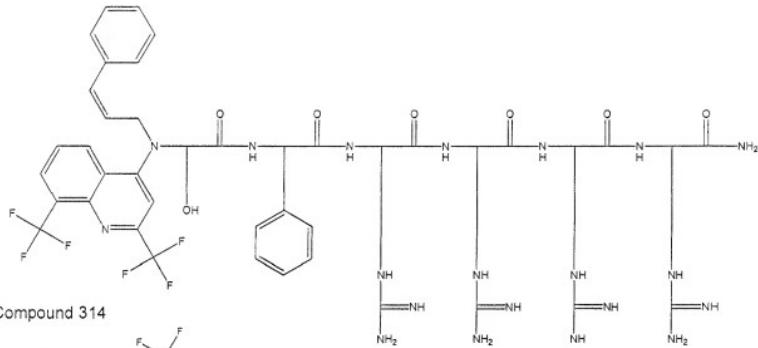


Compound 342

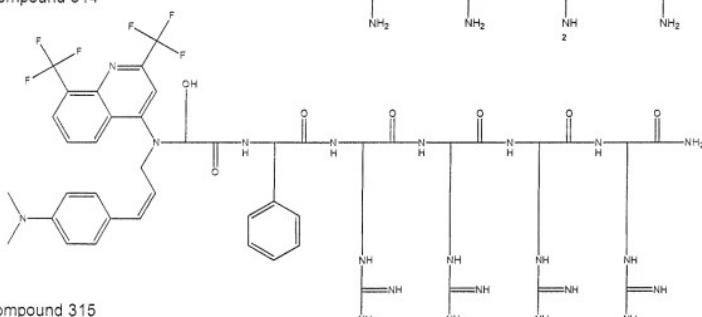


Compound 343

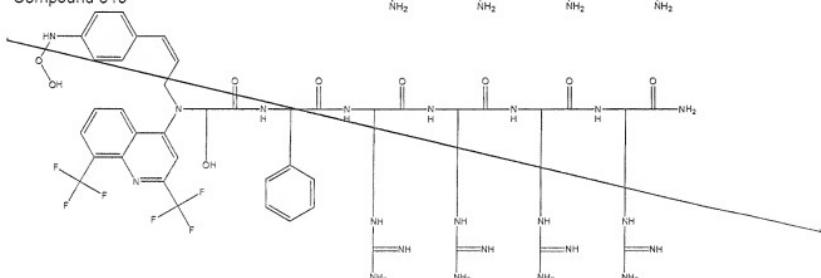
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Compound 314

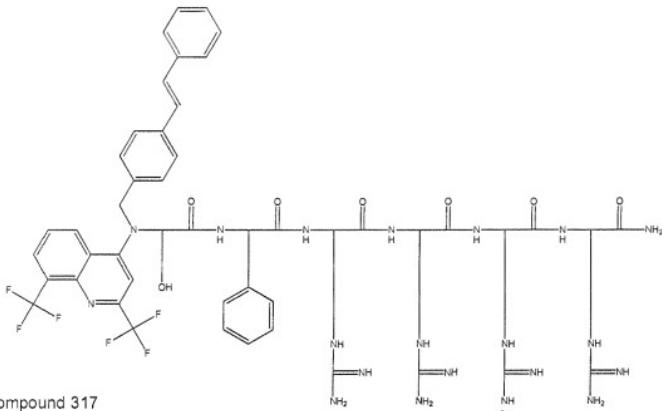


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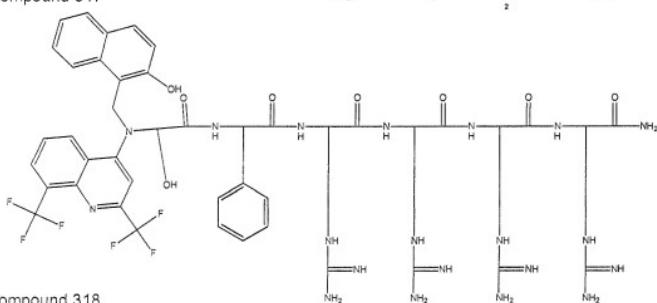


Compound 316

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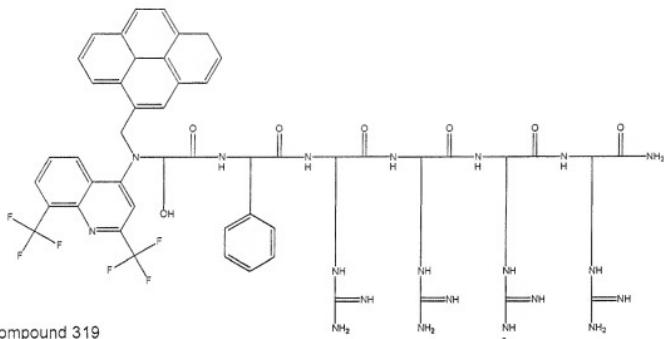


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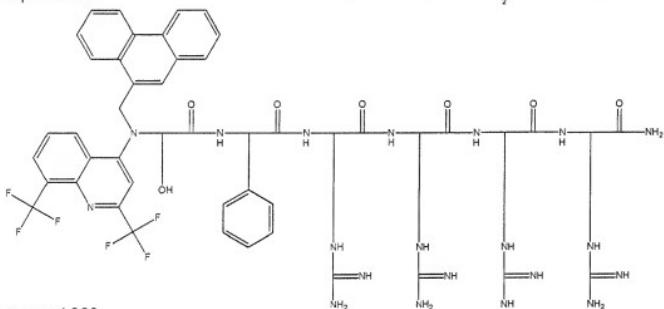


Compound 318

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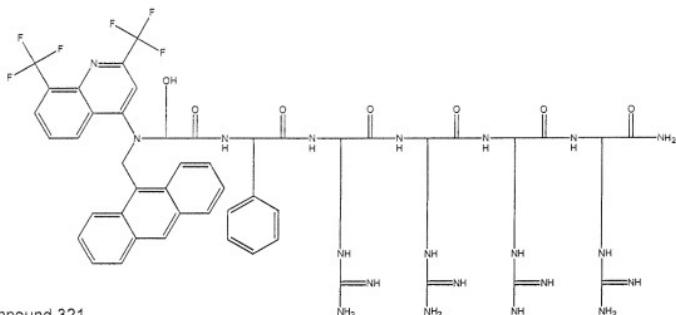


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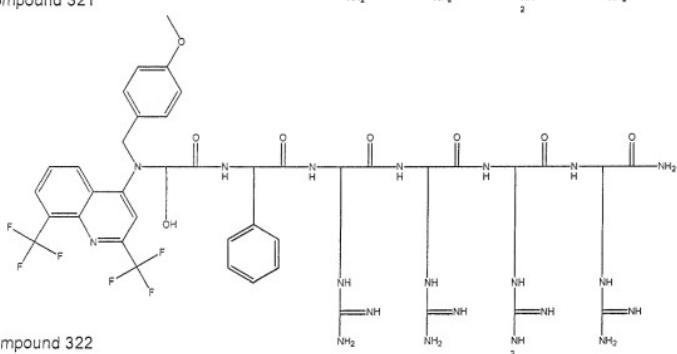


Compound 320

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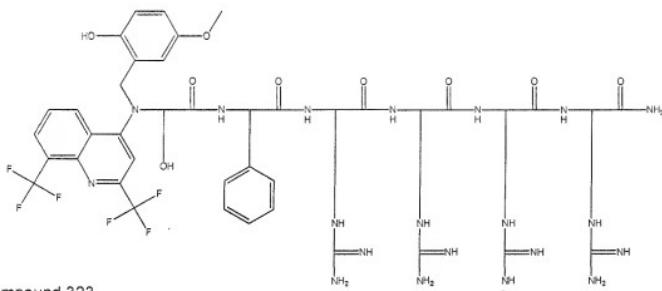


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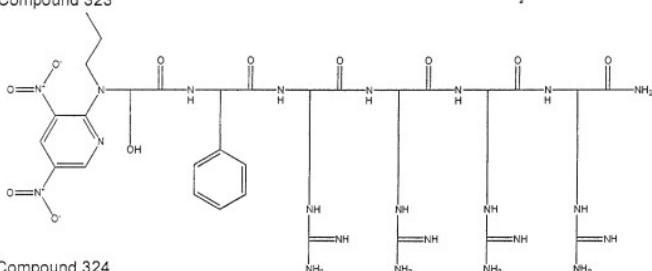


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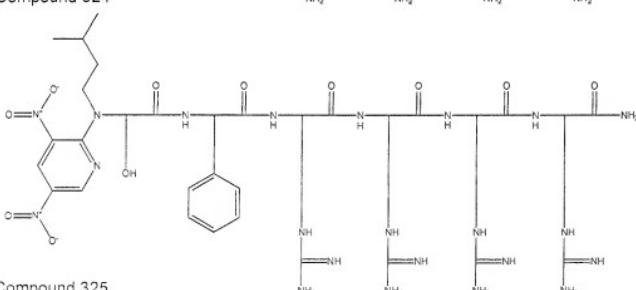
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Compound 323

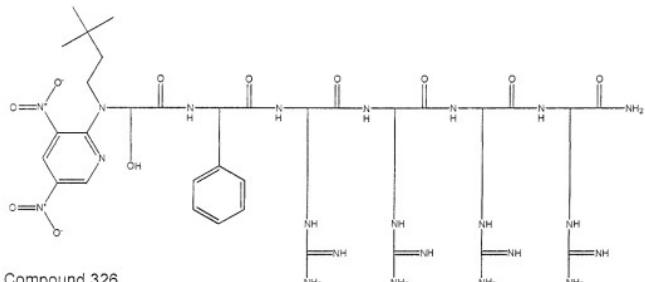


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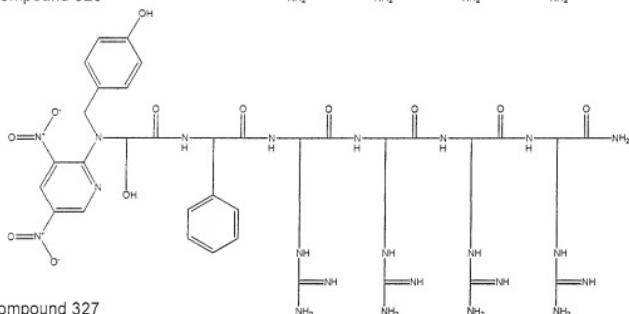


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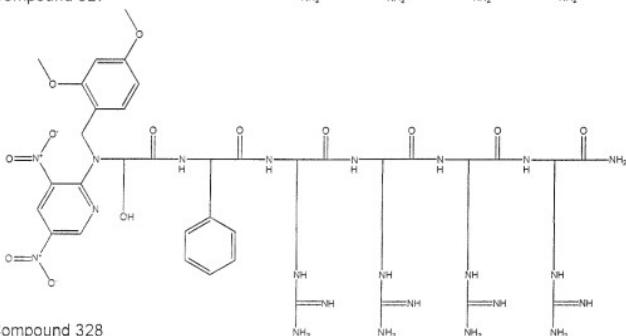
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Compound 326

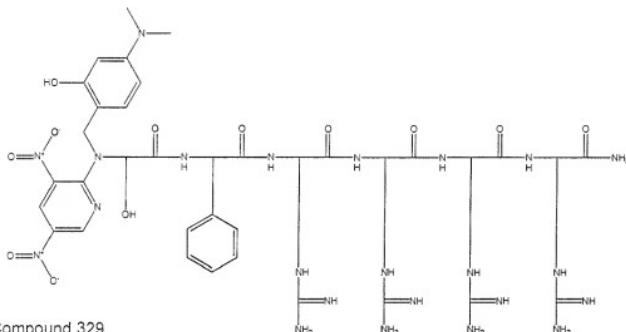


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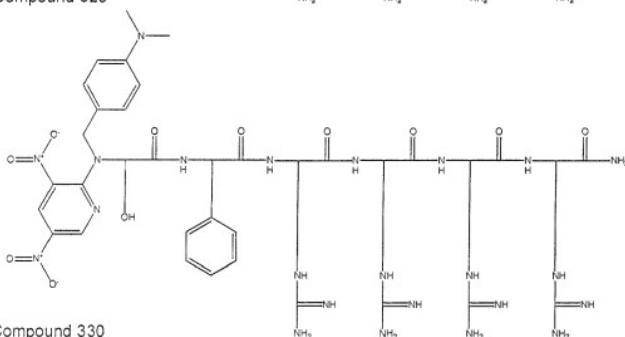


Compound 328

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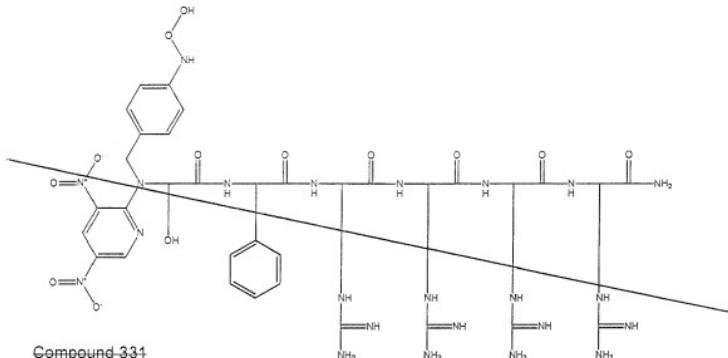


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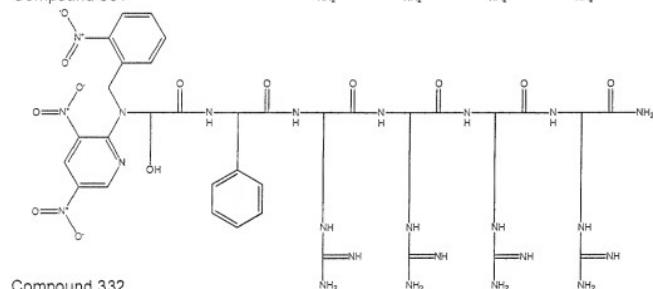


Compound 330

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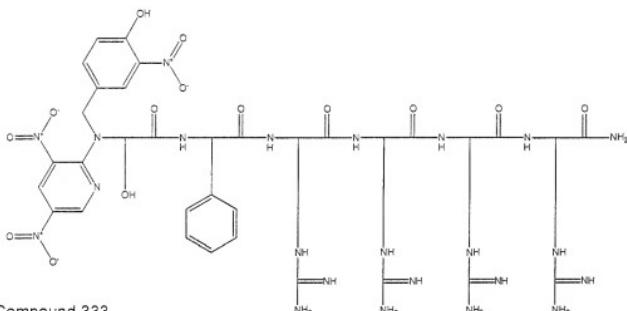


Compound 334

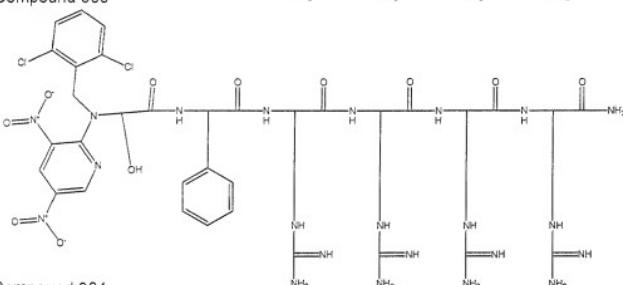


Compound 332

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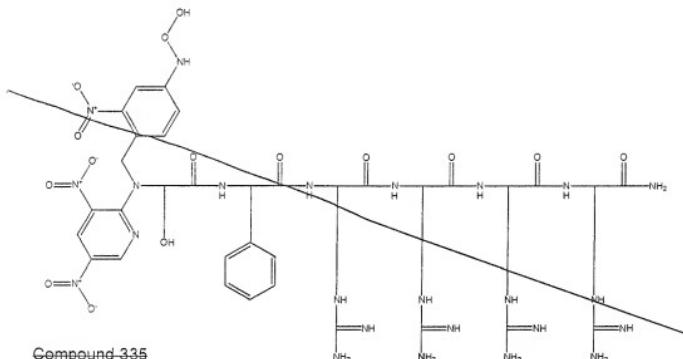


Compound 333

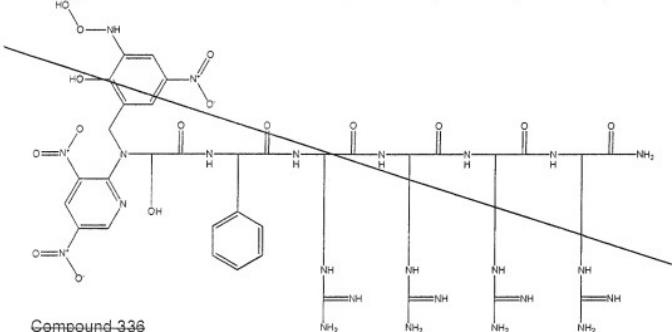


Compound 334

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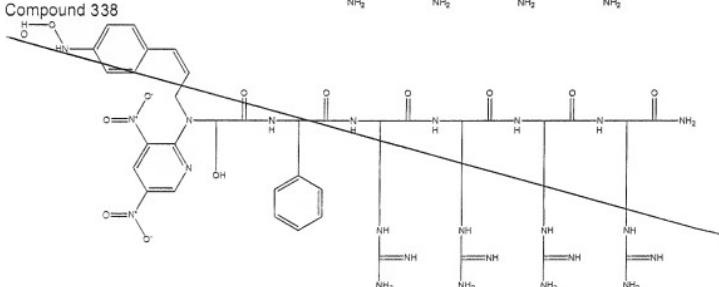
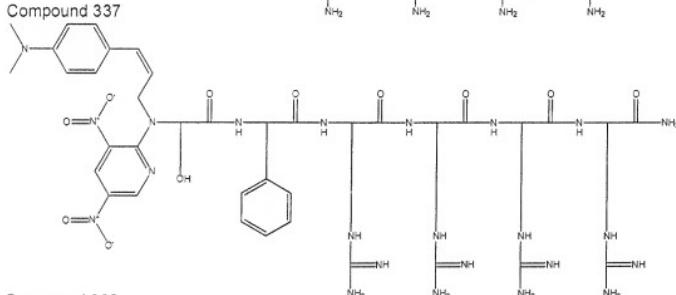
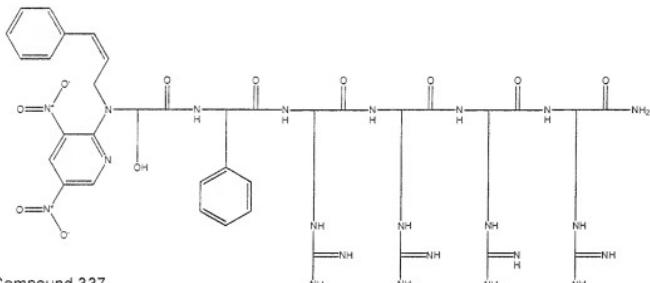


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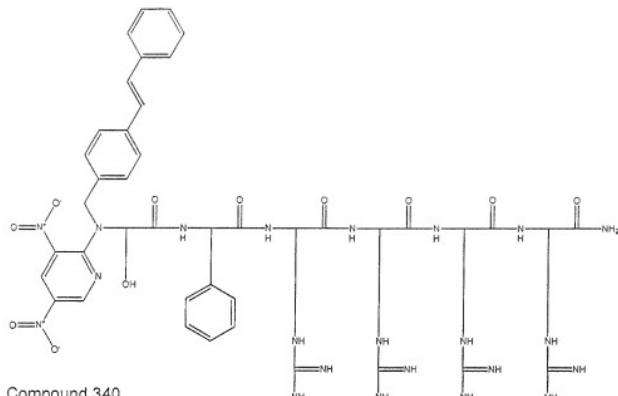


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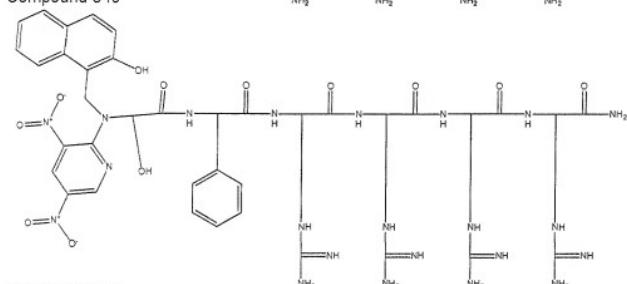
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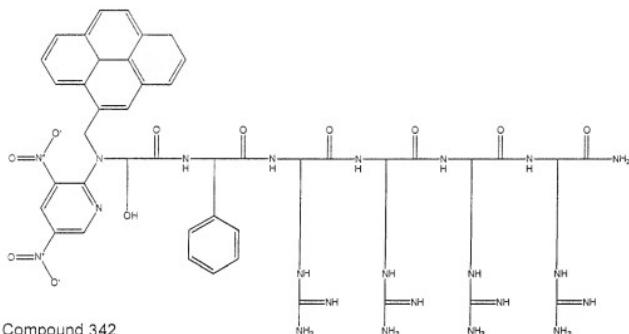


Compound 340

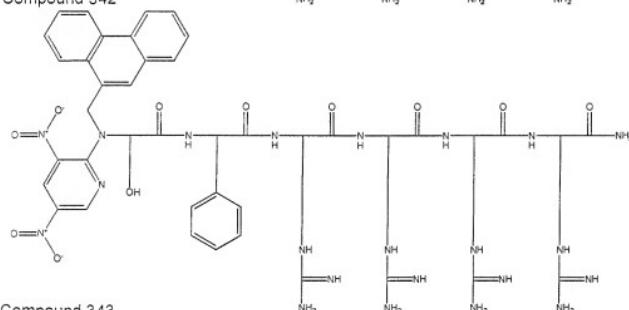


Compound 341

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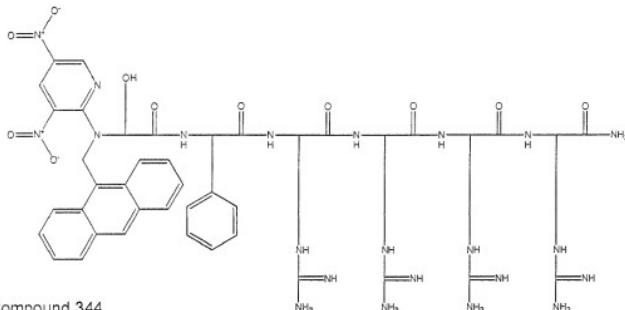


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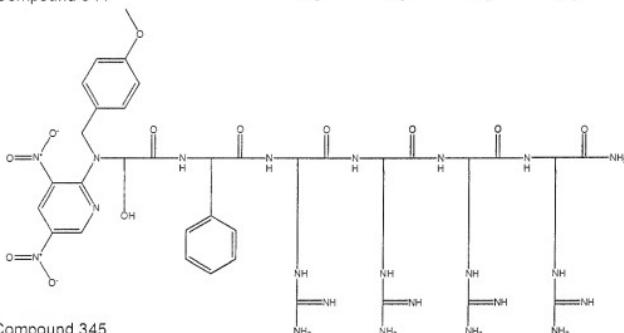


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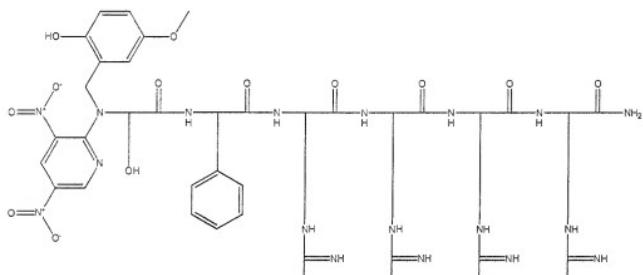


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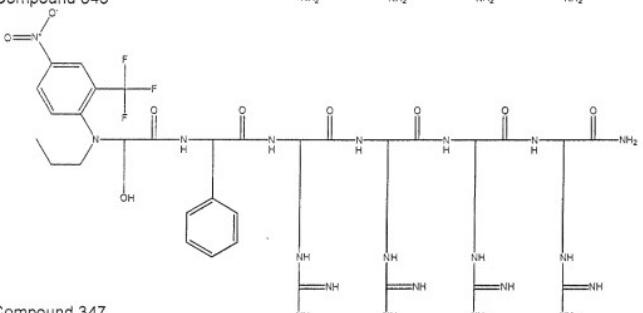


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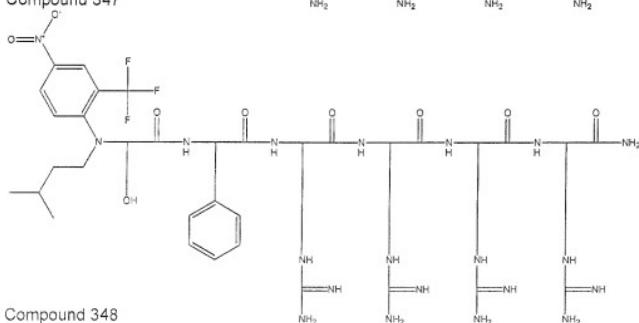
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Compound 346

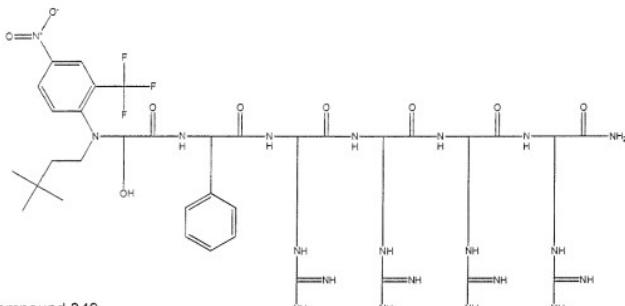


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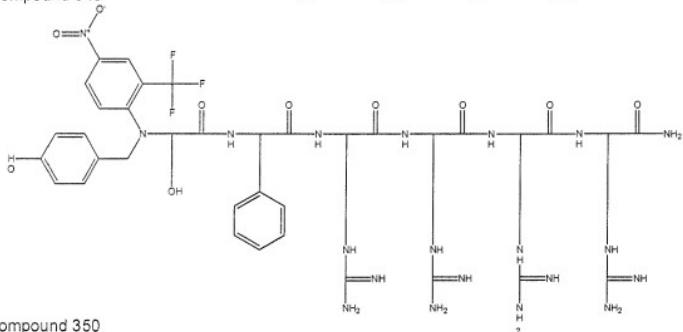


Compound 348

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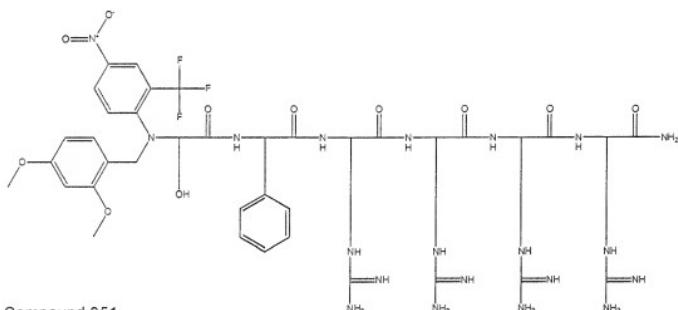


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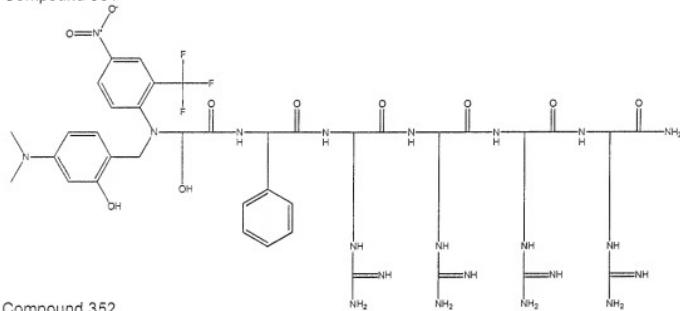


Compound 350

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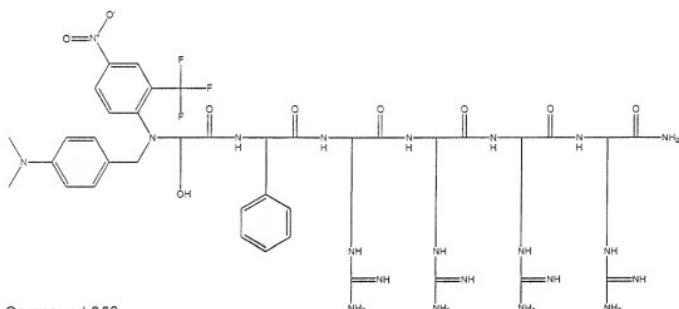


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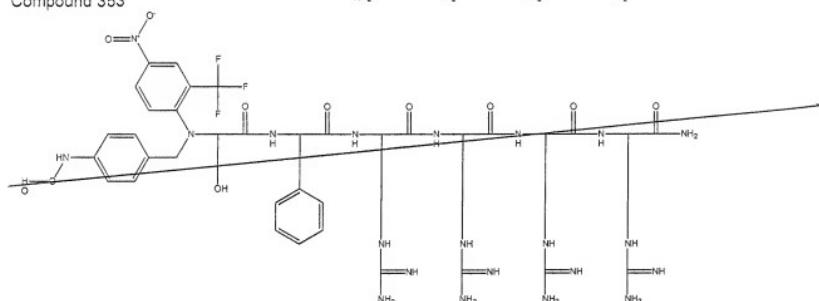


Compound 352

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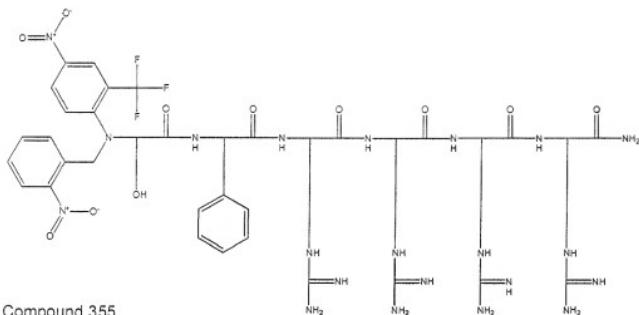


Compound 353

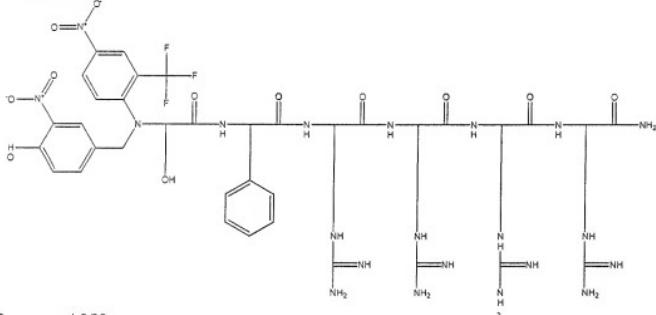


Compound 354

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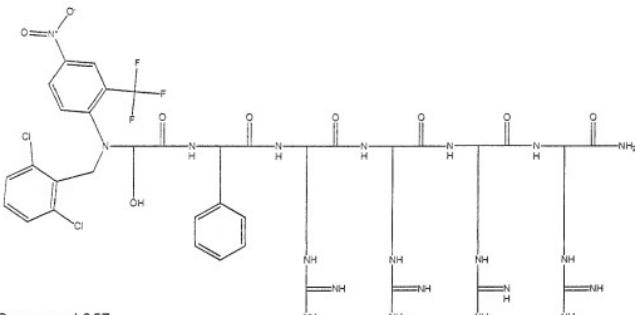


Compound 355

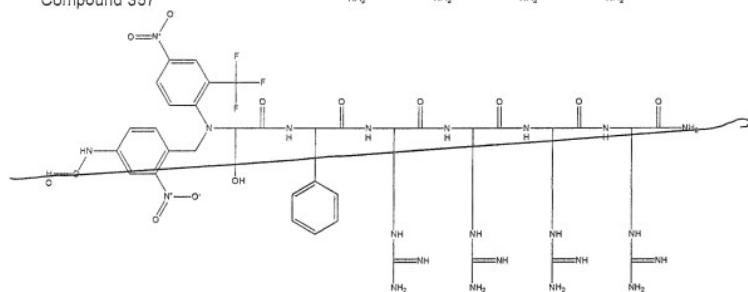


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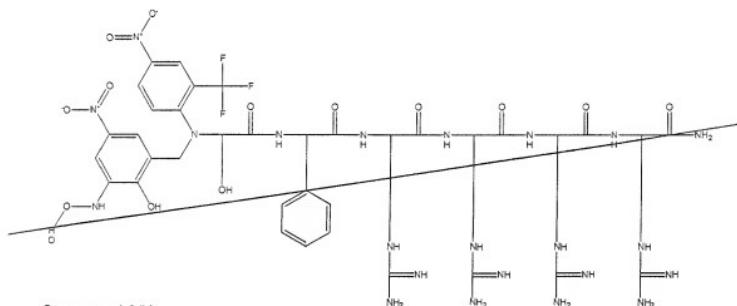


Compound 357

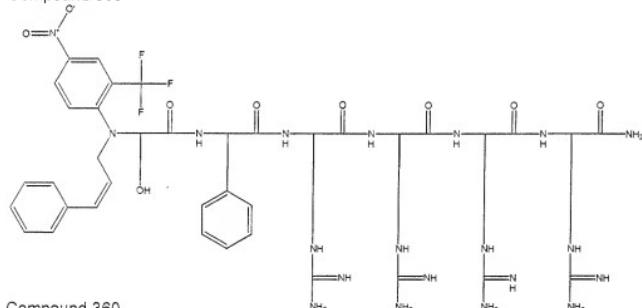


Compound 358

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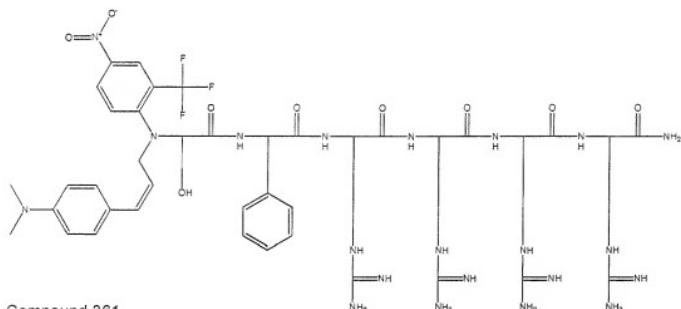


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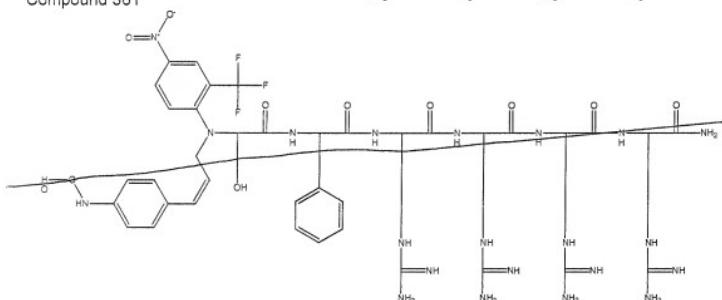


Compound 360

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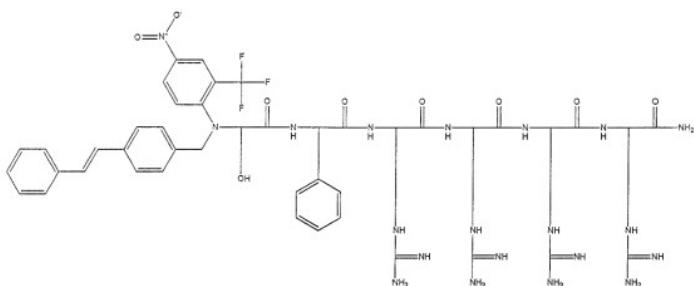


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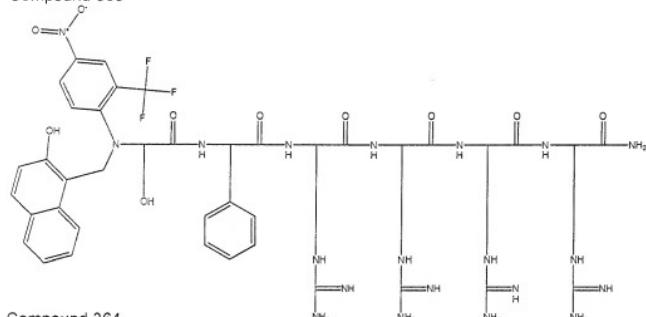


Compound 362

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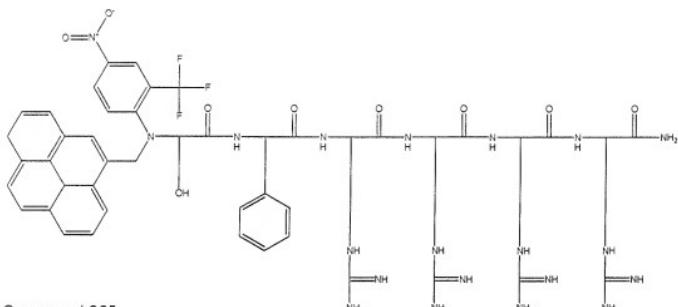


Compound 363

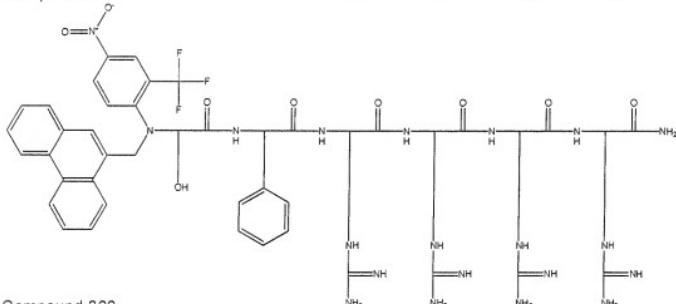


Compound 364

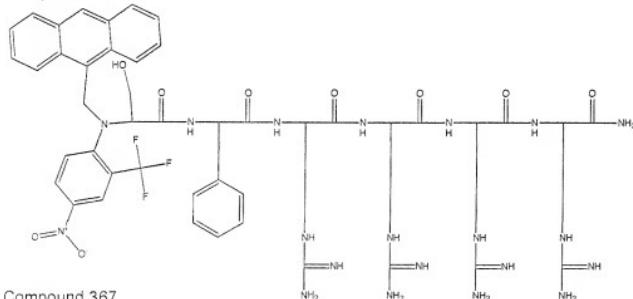
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Compound 365

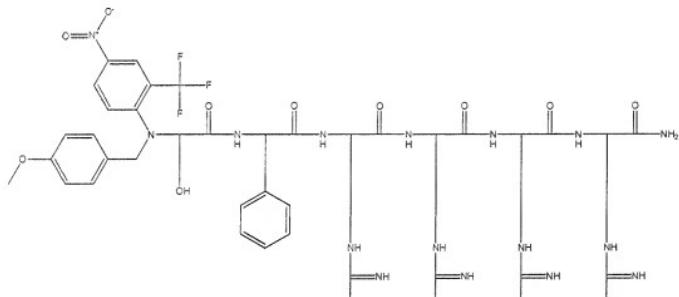


Compound 366

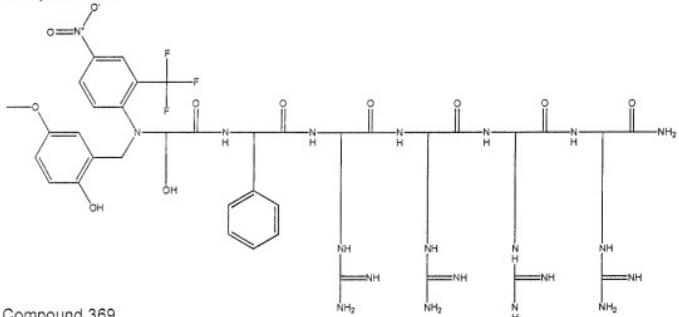


Compound 367

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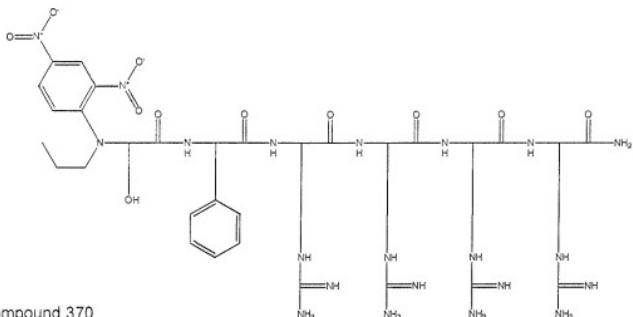


Compound 368

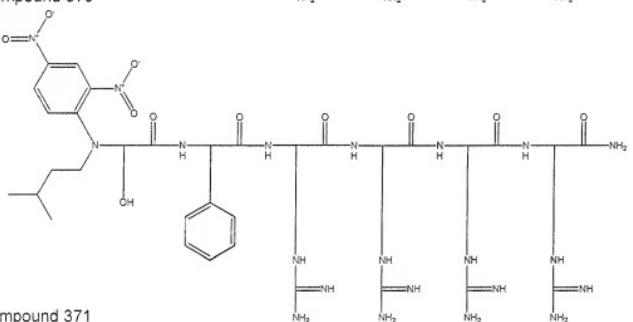


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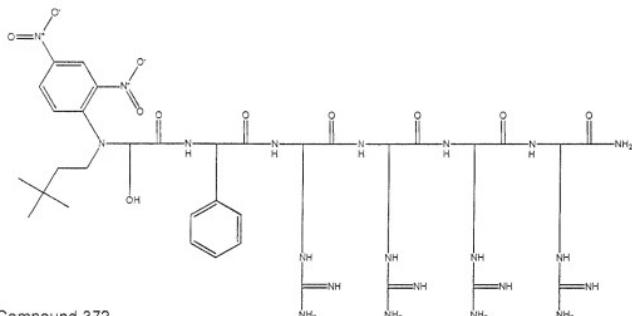


Compound 370

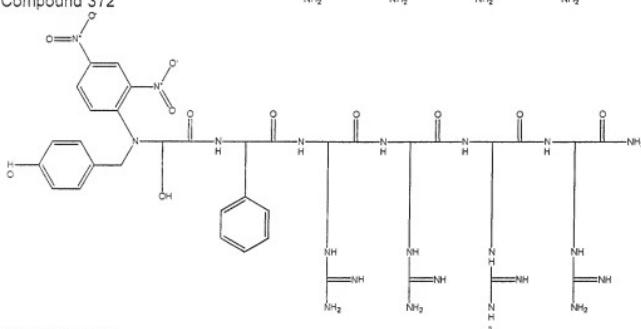


Compound 371

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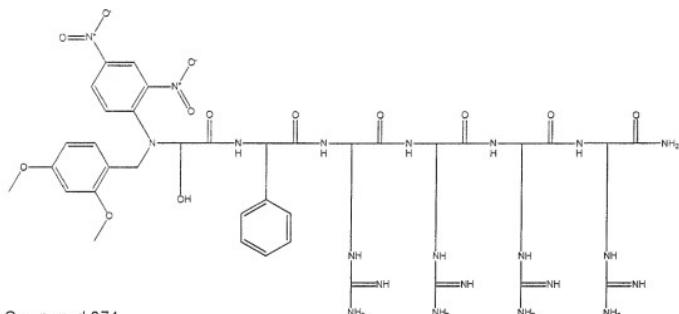


Compound 372

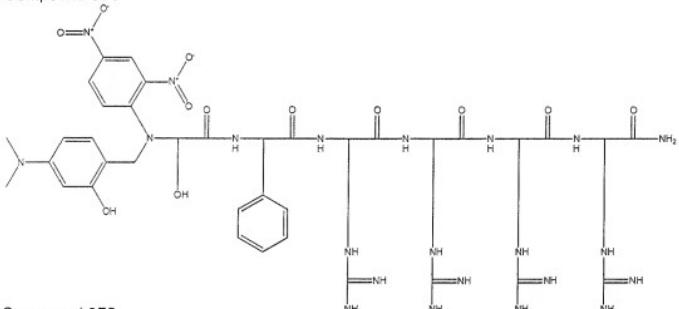


Compound 373

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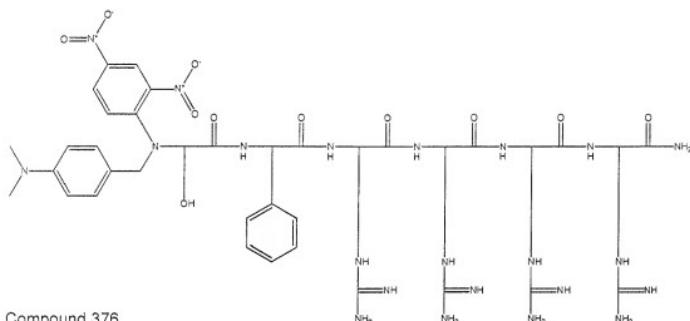


Compound 374

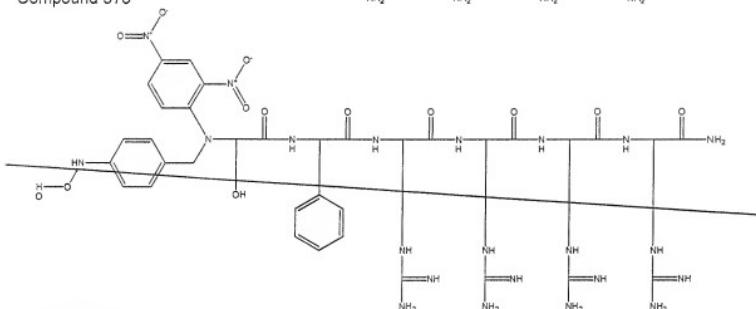


Compound 375

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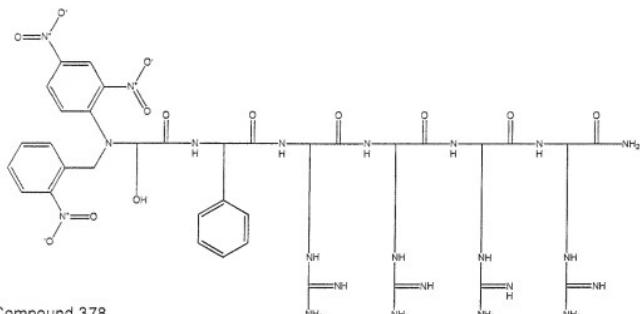


Compound 376

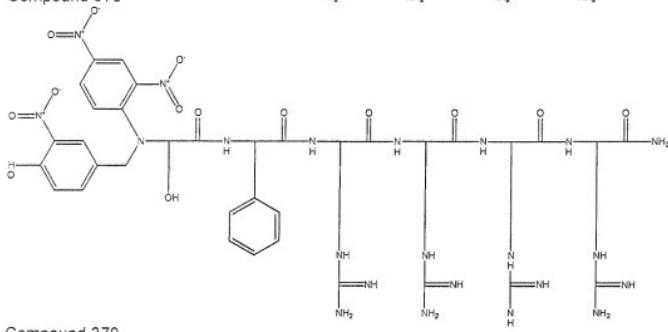


Compound 377

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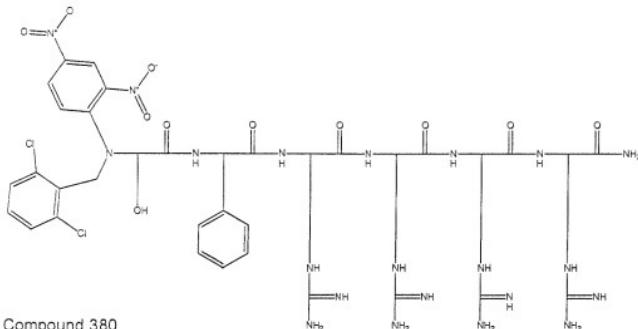


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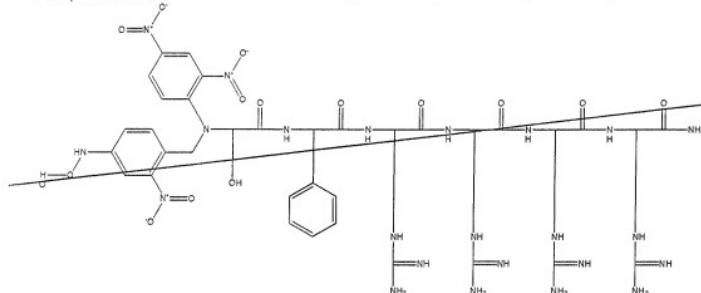


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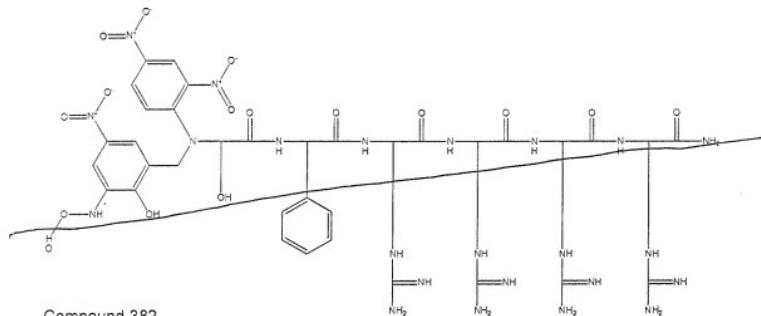


Compound 380

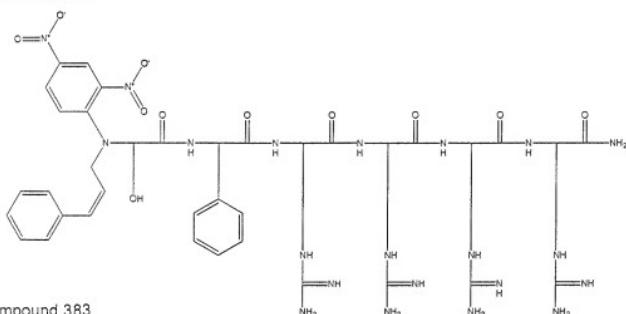


Compound 384

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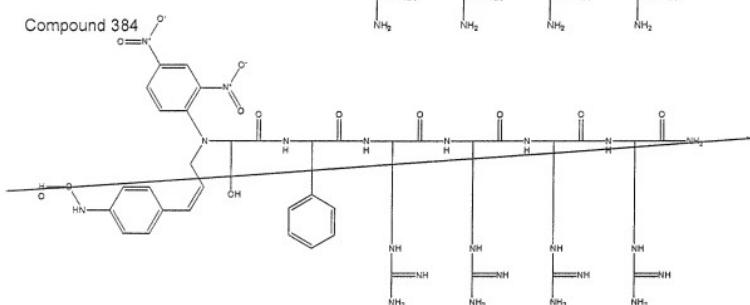
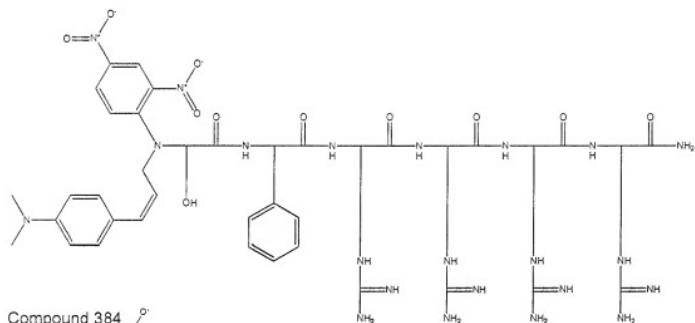


Compound 382



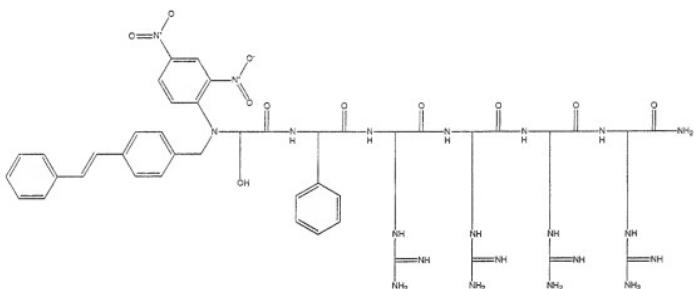
Compound 383

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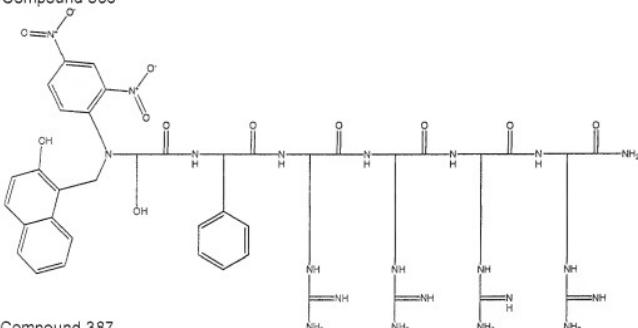


Compound 385

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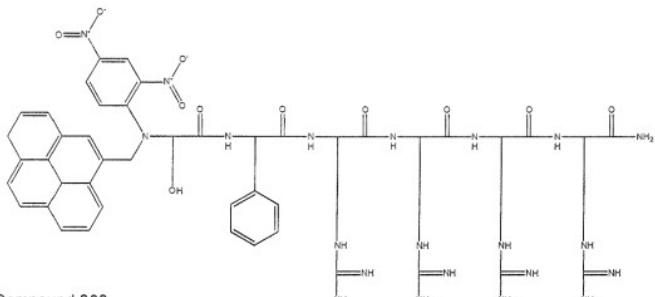


Compound 386

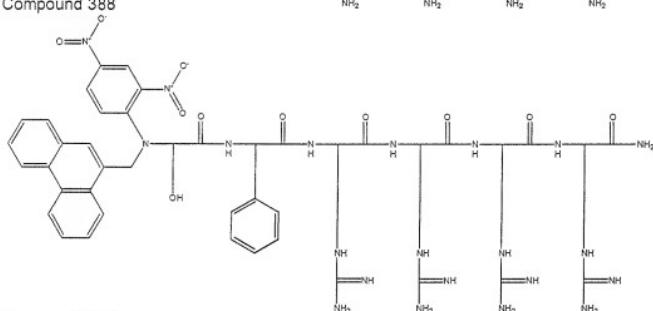


Compound 387

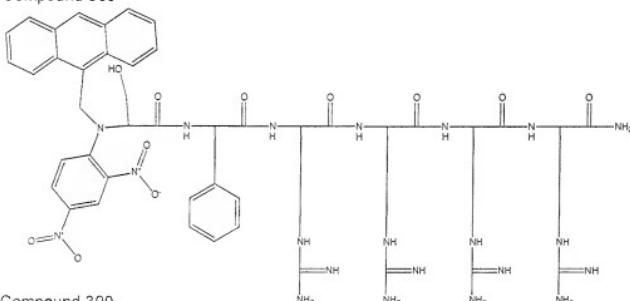
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Compound 388



Compound 389



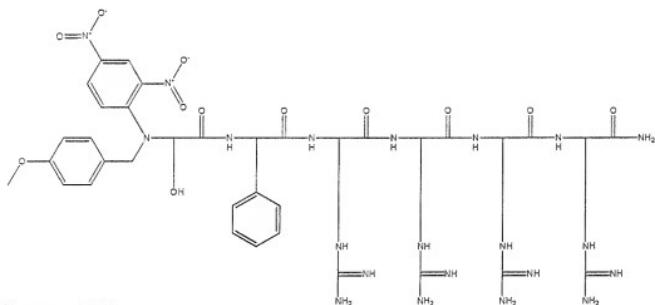
Compound 390

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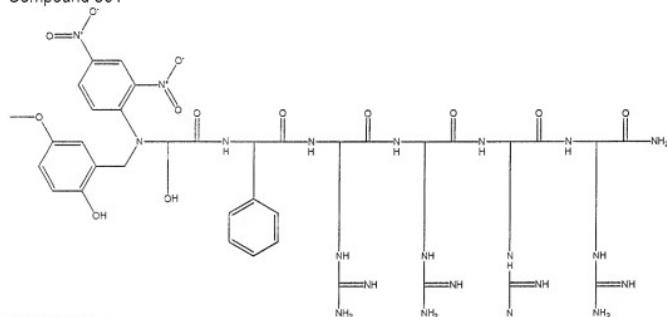
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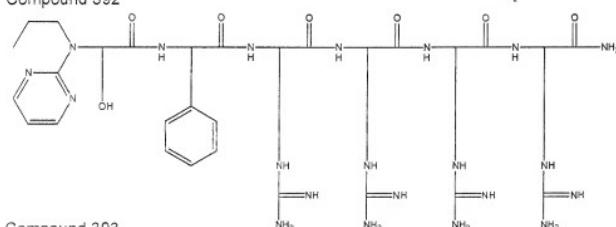
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Compound 391

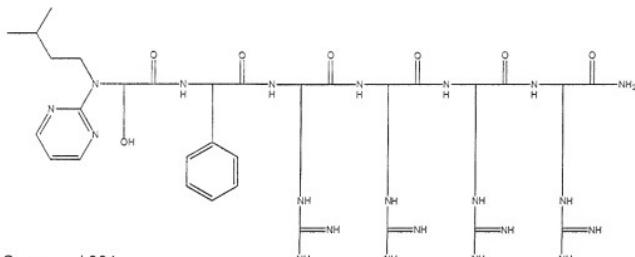


Compound 392

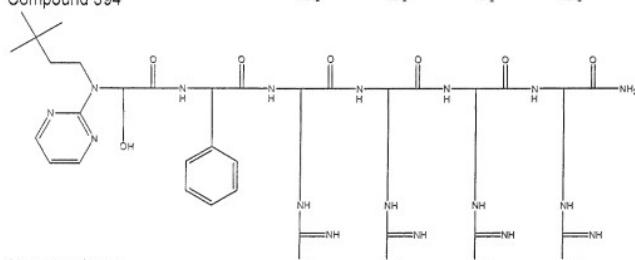


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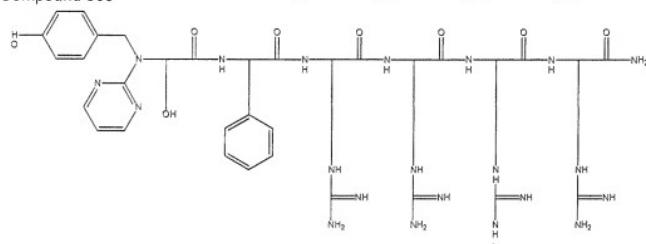
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Compound 394

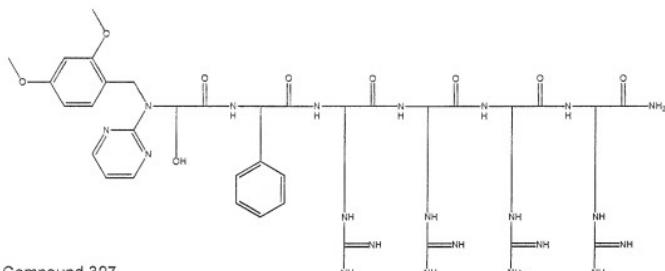


Compound 395

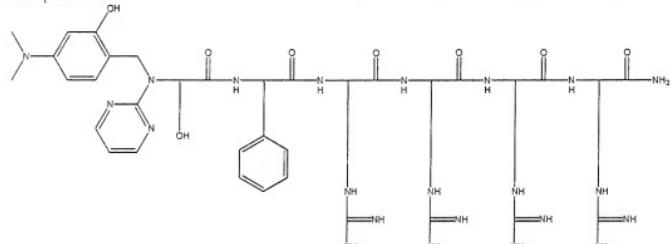


Compound 396

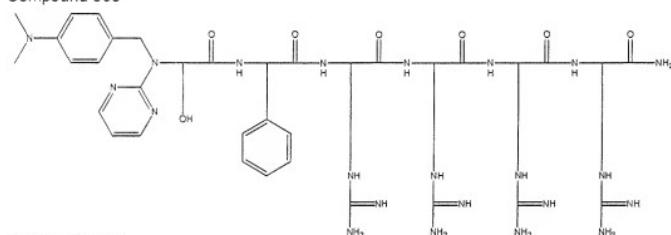
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Compound 397

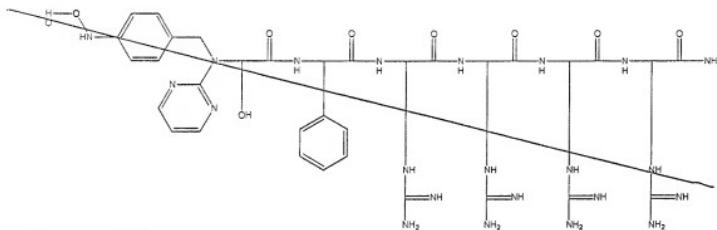


Compound 398

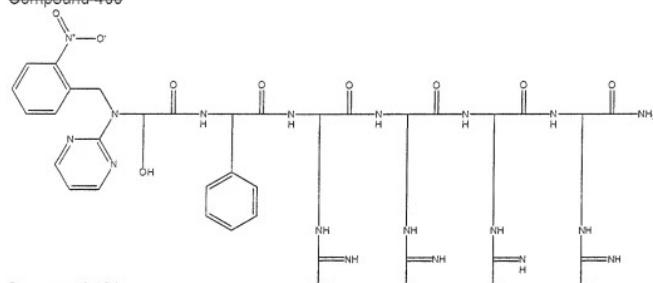


Compound 399

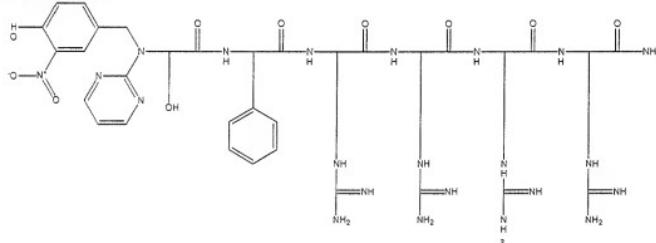
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Compound 400

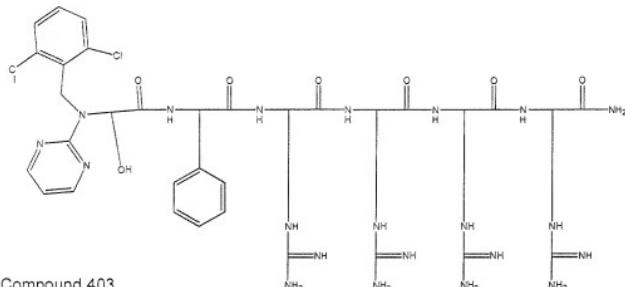


Compound 401

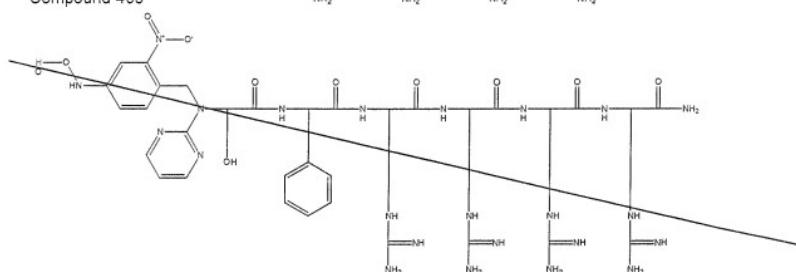


Compound 402

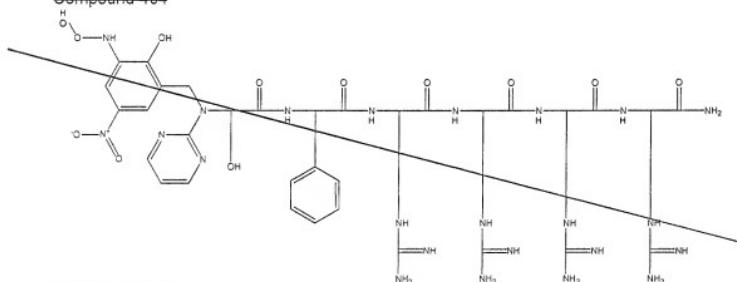
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Compound 403

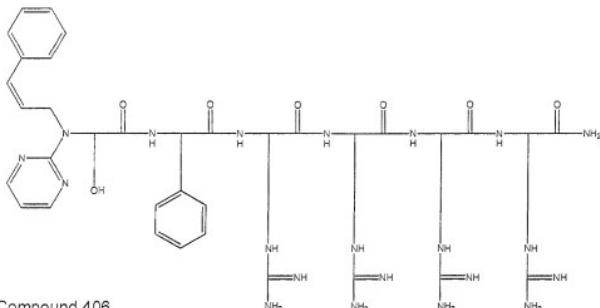


Compound 404

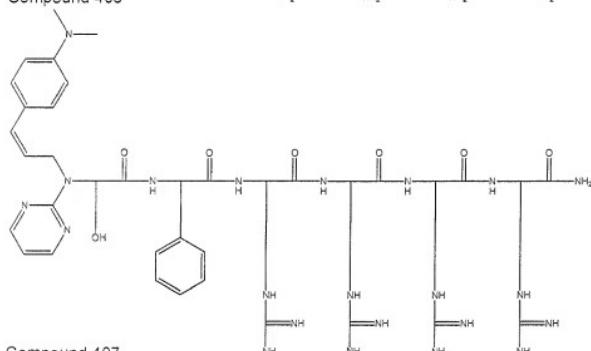


Compound 405

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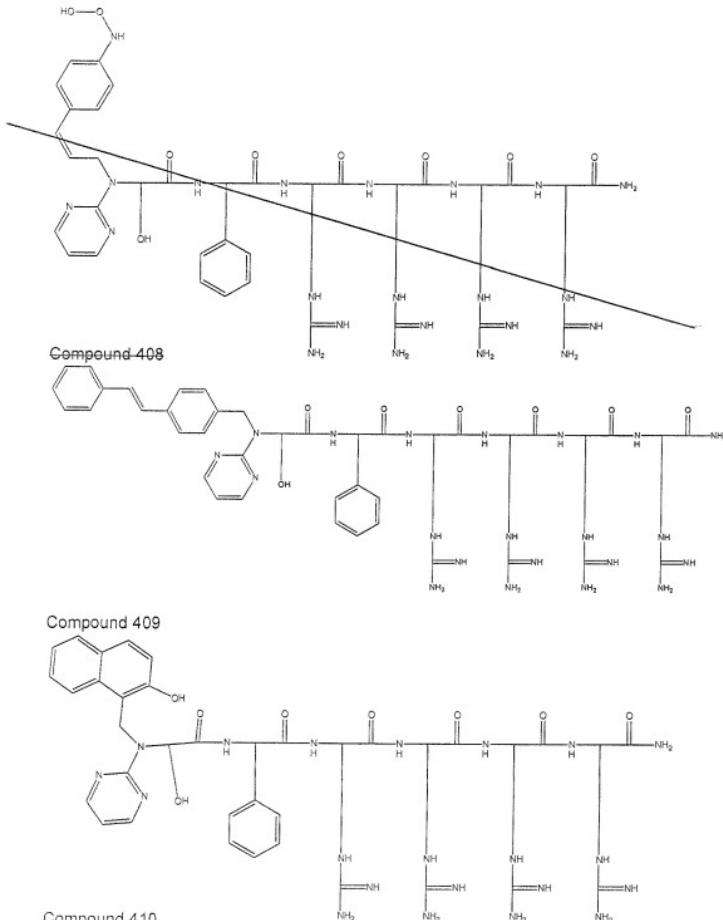


Compound 406

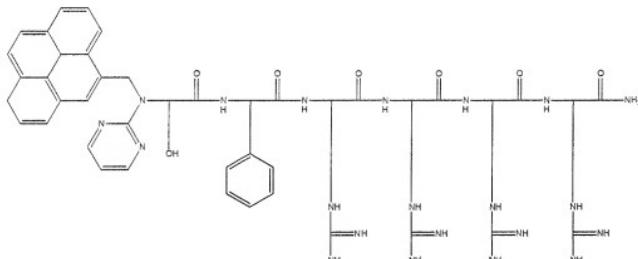


Compound 407

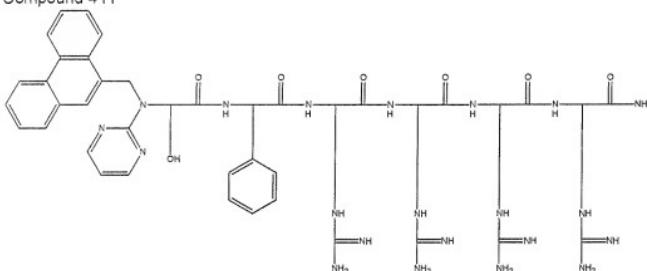
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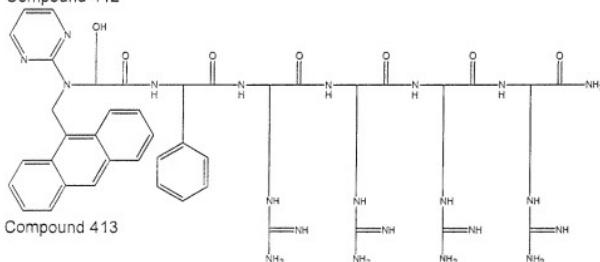
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Compound 411

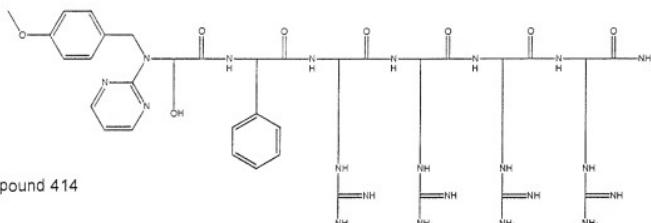


Compound 412



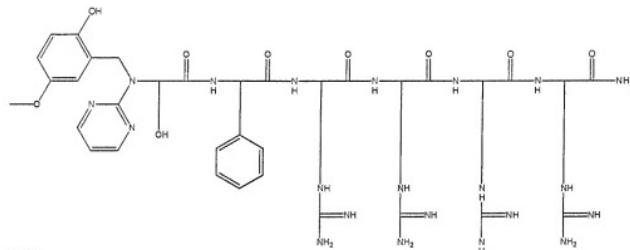
Compound 413

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Compound 414

and



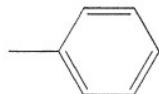
Compound 415

wherein amino acid chains are indicated as follows:

-OH represents serine,

-NH₂ represents lysine,

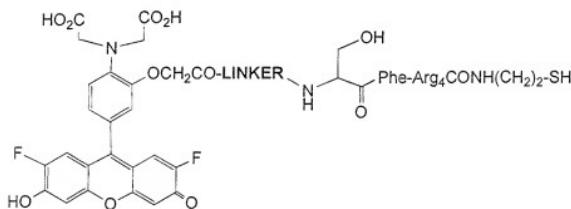
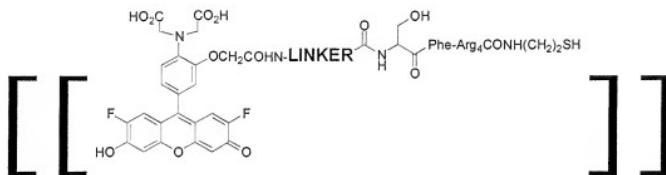
represents arginine, and



represents phenylalanine.

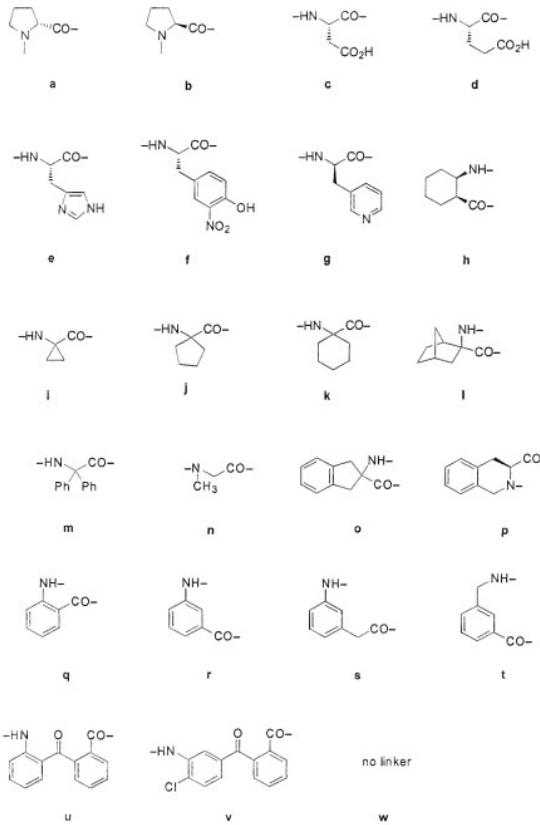
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89. (Currently amended) A chemical compound comprising SEQ ID NO:1 having the structure:



wherein the LINKER is selected from the group consisting of the following:

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90. (Currently amended) A chemical compound having the structure:
fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3); wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine; and wherein the linker is selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker; and wherein the chemical compound is a substrate for a protein kinase or a precursor of a substrate for a protein kinase.

91. (Original) The chemical compound of claim 90, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

92. (Previously presented) The chemical compound of claim 90, wherein the fluorophore comprises a fluorescein group.

93. (Currently amended) The chemical compound of claim 90, wherein the fluorophore comprises a dansyl group, an acridine group, an Alexa Fluor® group, a BODIPY® group, an Oregon Green® group, a Rhodamine Green group, a Rhodamine Red-X group, a Texas Red® group, a Cascade Blue® group, a Cascade Yellow group, a Marina Blue® group, a Pacific Blue group, an AMCA-X group, or a coumarin group.

94-95. (Canceled)

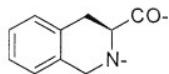
96. (Previously presented) A chemical compound having the structure:
fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);
wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or

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tyrosine, wherein the linker is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



and



97. (Previously presented) A chemical compound having the structure:

fluorophore-LINKER-X-FRRRK-amide (SEQ ID NO:3);

wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine, wherein the linker is selected from the group consisting of the following:



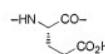
a



b



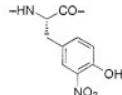
c



d



e



f



g



h



i



j

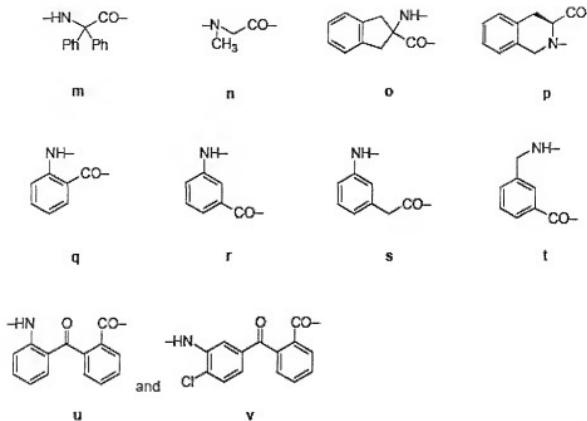


k



l

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98. (Canceled)

99. (Currently amended) The chemical compound of claim 98 90, wherein the chemical compound is specific for protein kinase C.

100. (Original) The chemical compound of claim 99, wherein the chemical compound is specific for isoforms α , β , and γ of protein kinase C.

101. (Currently amended) The chemical compound of claim 98 90, the chemical compound is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca^+ /calmodulin-dependent protein kinase, mitogen-activated protein kinase,

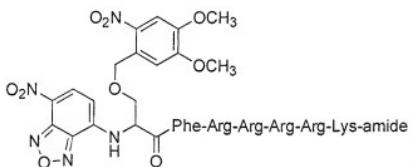
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protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

102. (Original) The chemical compound of claim 90, wherein the chemical compound further comprises a carbohydrate, a lipid or a nucleic acid.

103-121. (Canceled)

122. (Previously presented) A chemical compound comprising SEQ ID NO:3 having the structure



123. (Previously presented) A composition comprising a chemical compound of claim 89, and a carrier.

124-126. (Cancelled)

127. (Currently amended) The precursor of a substrate for a protein kinase of claim 60, wherein the substrate comprises a metal ion chelator.

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128. (Currently amended) The precursor of a substrate for a protein kinase of claim 127, wherein the metal ion is a magnesium ion or a calcium ion.

129. (Currently amended) The chemical compound of claim 90, wherein the chemical compound comprises a metal ion chelator and the metal ion chelator induces a change in fluorescence intensity.

130. (Original) The chemical compound of claim 129, wherein the metal ion is a magnesium ion or a calcium ion.

131. (Original) The chemical compound of claim 129, wherein the change in fluorescence intensity is at least a 20% change in fluorescence intensity.

132. (Canceled)

133. (Previously presented) The chemical compound of claim 90, wherein the linker comprises a turn to position the fluorophore in a location closer to the serine, the threonine or the tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

134. (Previously presented) The chemical compound of claim 89, wherein the linker comprises a turn to position the fluorophore in a location closer to the terminal serine, the terminal threonine or the terminal tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

135-136. (Canceled)

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137. (Previously presented) The composition of claim 123, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

138. (Previously presented) A composition comprising the substrate of claim 49, and a carrier.

139. (Previously presented) The composition of claim 138, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

140. (Previously presented) A composition comprising the compound of claim 88, and a carrier.

141. (Previously presented) The composition of claim 140, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

142. (Previously presented) A composition comprising the compound of claim 90, and a carrier.

143. (Previously presented) The composition of claim 142, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

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144-145. (Canceled)

146. (Previously presented) A composition comprising the compound of claim 122, and a carrier.

147. (Previously presented) The composition of claim 146, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

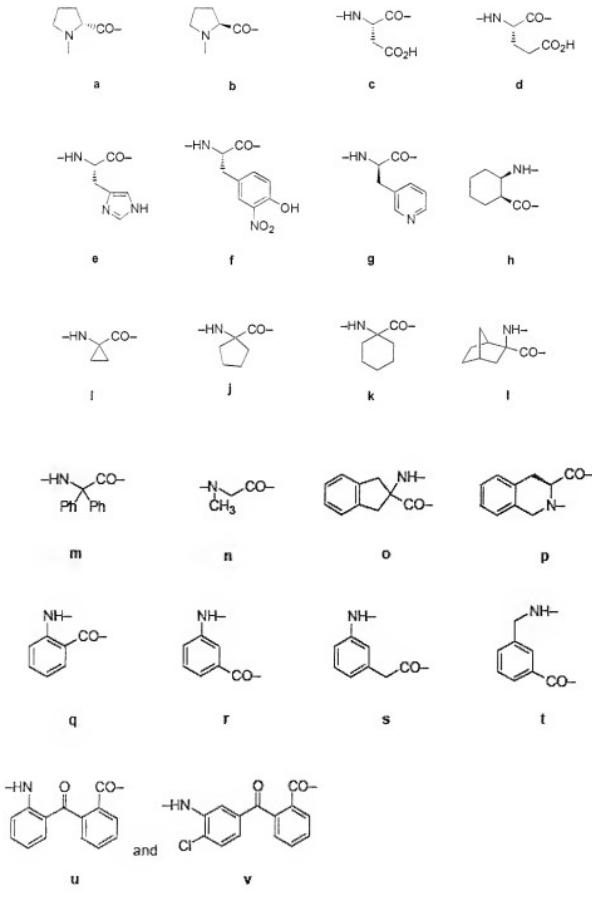
148. (Currently amended) A precursor of a substrate for a protein kinase ~~or a precursor of the substrate~~, wherein the ~~substrate or the~~ precursor comprises:

a peptide substrate for the protein kinase, wherein the peptide comprises a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide;

wherein the fluorophore is attached directly to the peptide or the fluorophore is attached to the peptide by a linker selected from the group consisting of

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wherein a photolabile side chain is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, and wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the precursor substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the precursor substrate.

149. (Previously presented) A composition comprising the substrate of claim 83, and a carrier.

150. (Previously presented) The composition of claim 149, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

151. (Previously presented) A composition comprising the precursor of a substrate for a protein kinase of claim 59, and a carrier.

152. (Previously presented) The composition of claim 151, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

153. (Currently amended) A composition comprising the precursor of a substrate for a protein kinase ~~or a precursor of the~~ substrate of claim 148, and a carrier.

154. (Previously presented) The composition of claim 153, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.